Socio-Economic Atlas of Tajikistan 2005

The World Bank

THE STATE STATISTICAL COMMITTEE
OF THE REPUBLIC OF TAJIKISTAN

DFID Department for International Development

S³RI

GeoData Institute

University of Southampton

Foreword

This atlas is the culmination of a significant effort to deliver a snapshot of the socio-economic situation in Tajikistan at the time of the 2000 Census. The atlas arose out of a need to gain a better understanding among Government Agencies and NGOs about the spatial distribution of poverty, through its many indicators, and also to provide this information at a lower level of geographical disaggregation than was previously available, that is, the Jamoat.

Poverty is multi-dimensional and as such the atlas includes information on a range of different indicators of the well-being of the population, including education, health, economic activity and the environment. A unique feature of the atlas is the inclusion of estimates of material poverty at the Jamoat level. The derivation of these estimates involves combining the detailed information on household expenditures available from the 2003 Tajikistan Living Standards Survey and the national coverage of the 2000 Census using statistical modelling. This is the first time that this complex statistical methodology has been applied in Central Asia and Tajikistan is proud to be at the forefront of such innovation.

It is hoped that the atlas will be of use to all those interested in poverty reduction and improving the lives of the Tajik population.

Professor Shabozov Mirgand
Chairman
Tajikistan State Statistical Committee

Project Overview

The Socio-economic Atlas, including a poverty map for the country, is part of the on-going Poverty Dialogue Program of the World Bank in collaboration with the Government of Tajikistan. The Program started with support to the 1999 Tajikistan Living Standard Survey and the subsequent preparation of the Tajik Poverty Assessment. It has been continued with further support to the 2003 TLSS and the Poverty Assessment Update, as well as assistance for local expert analyses of poverty. The Program currently includes a range of activities, including the poverty mapping project which led to the Atlas. Within the World Bank, the Poverty Dialogue Program is task managed by Dr. Cem Mete.

The socio-economic atlas was developed by the University of Southampton, UK, in collaboration with Tajikistan State Statistical Committee, and funded by UK Department for International Development through the World Bank Trust Fund.

State Statistical Committee

The team of the State Statistical Committee was led by Prof Mirgand Shabozov, Chairman, and comprised of Ms. Muhammadieva Bakhtya (First Deputy Chairman), Mr. Khaitov Sulton (Head of Census Division) and Ikhtior Kholmatov (programmer and census data specialist).

University of Southampton Team

The University of Southampton team draws together experts from the Southampton Statistical Science Research Institute (S3RI) and the GeoData Institute. The team was led by Prof. Jane Falkingham and the overall project was managed by Dr Craig Hutton. Team members include Dr Angela Baschieri (expert on poverty mapping and the statistical analysis of census and survey data), Andrew Murdock (GIS manager) and Andrew Harfoot (GIS expert) and Jason Sadler (software design). The Russian translation of the atlas was provided by Ms Elina Lapshina.

Acknowledgements

The authors would sincerely like to thank the Government of Tajikistan for permitting access to the 2000 Census and the 2003 Tajikistan Living Standards Survey. The authors would also like to thank the following whose contribution was invaluable to the project: Lola Atabaeva, Munavara Khamidova, Munavara Jalilova who all provided additional translation for the atlas and also for the project team; Thekla Kelbert, Farroukh Nazarmaleov UN Coordination Unit for their generous support to the project team and for supplying the jamoat map in GIS format; Saodat Bazarova, Arsen Khadziev of the World Bank Dushanbe office for their support throughout.

Socio-Economic Atlas of Tajikistan

This atlas provides a series of maps illustrating the social and economic condition of the Republic of Tajikistan, including indicators on the following topics:

- Population
- Education
- Health
- Household amenities
- Economic
- Poverty
- Environment

The main source of data is the 2000 Census of Tajikistan and the 2003 Tajikistan Living Standards Survey (TLSS). In addition some environmental data is obtained from remote sensing imagery.

Maps for rural areas are presented for **jamoat.**

Maps for urban areas are presented for **cities and urban settlements.**

Administrative structure of the Republic at the time of the 2000 Census of Tajikistan

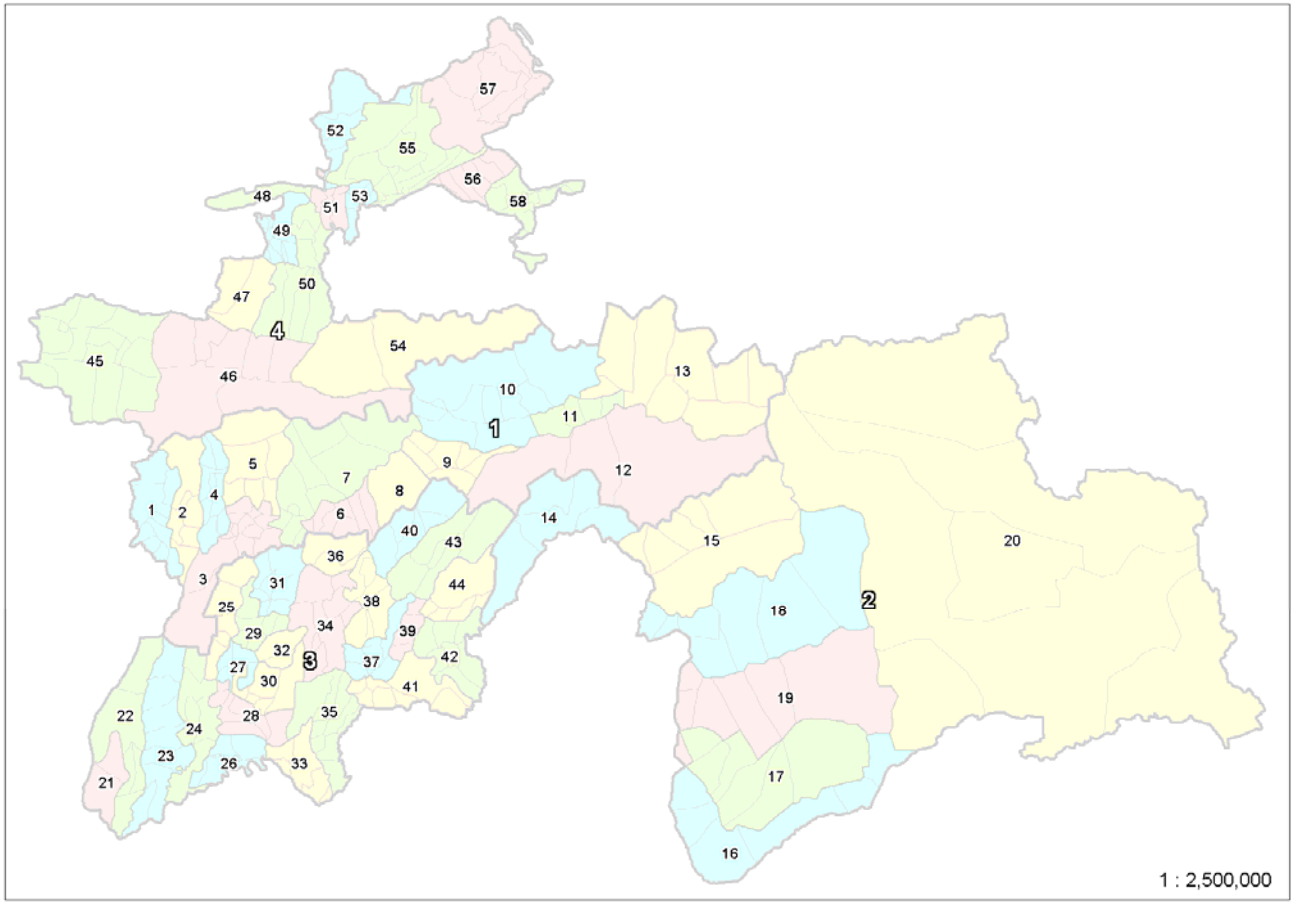
The Republic of Tajikistan is administratively divided into 5 regions:

- Sugd oblast
- Khatlon oblast
- Gorno-Badagakashan oblast
- RRS (Regional Republic Subordination) which consist of 13 autonomous districts]
- Dushanbe

There are a total of 58 rayons, 4 districts of Dushanbe and 17 cities subordinated either to the Republic or to the oblast.

There are 356 jamoats and 13 towns of rural type.

Location



Oblasts

1 Direct Rule Districts
2 GBAO
3 Khatlon
4 Sughd

Rayons

1 Tursunzoda
2 Shahrinav
3 Rudaki
4 Hissor
5 Varzob
6 Fayzobod
7 Vahdat
8 Roghun
9 Nurobod
10 Rasht
11 Tojikobod
12 Tavildara
13 Jirgatol
14 Darvoz
15 Vanj
16 Ishkoshim
17 Roshtqala
18 Rushon
19 Shughnon
20 Murghob
21 Nosir Khusrav
22 Shahrituz
23 Qabodiyon
24 Jilikul
25 Khuroson
26 Qumsangir
27 Bokhtar
28 Kolkhozobod
29 Jomi
30 Vakhsh
31 Yovon
32 Sarband
33 Panj
34 Danghara
35 Farkhor
36 Norak
37 Vose
38 Sovet
39 Kulob
40 Baljuvon
41 Moskva
42 Shurobod
43 Khovaling
44 Muminobod
45 Pandjakent
46 Ayni
47 Shahriston
48 Zafarobod
49 Istaravshan
50 Ghonchi
51 Spitamen
52 Matchin
53 Jabor Rasulov
54 Kuhistoni Mastchoh
55 Ghafurov
56 Konibodom
57 Asht
58 Isfara

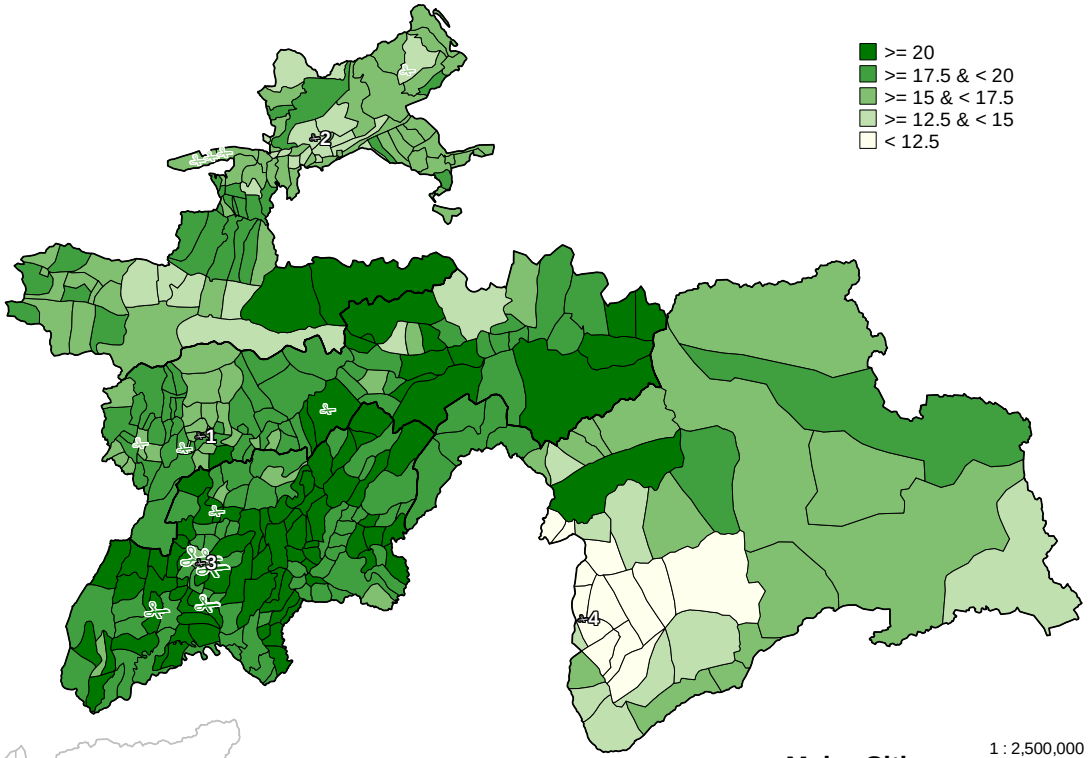
POPULATION

- Population under 5 years old (%)
- Population above 65 (%)
- Population Density
- Dependency Ratio
- Child Dependency Ratio
- Old Age Dependency Ratio
- Female Headed Household (proportion)

Population under 5 years old (%)

These maps indicate areas of the country with disproportionately large or small number of young children.

This provides an indication of regional differences in fertility.



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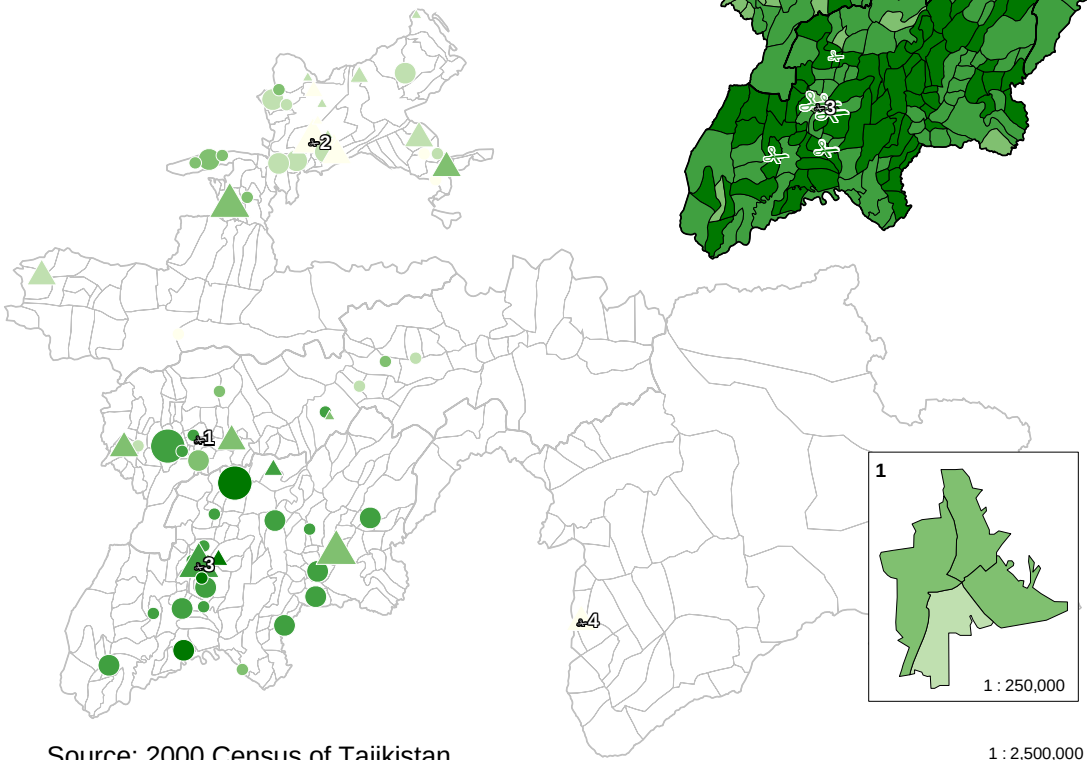


1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

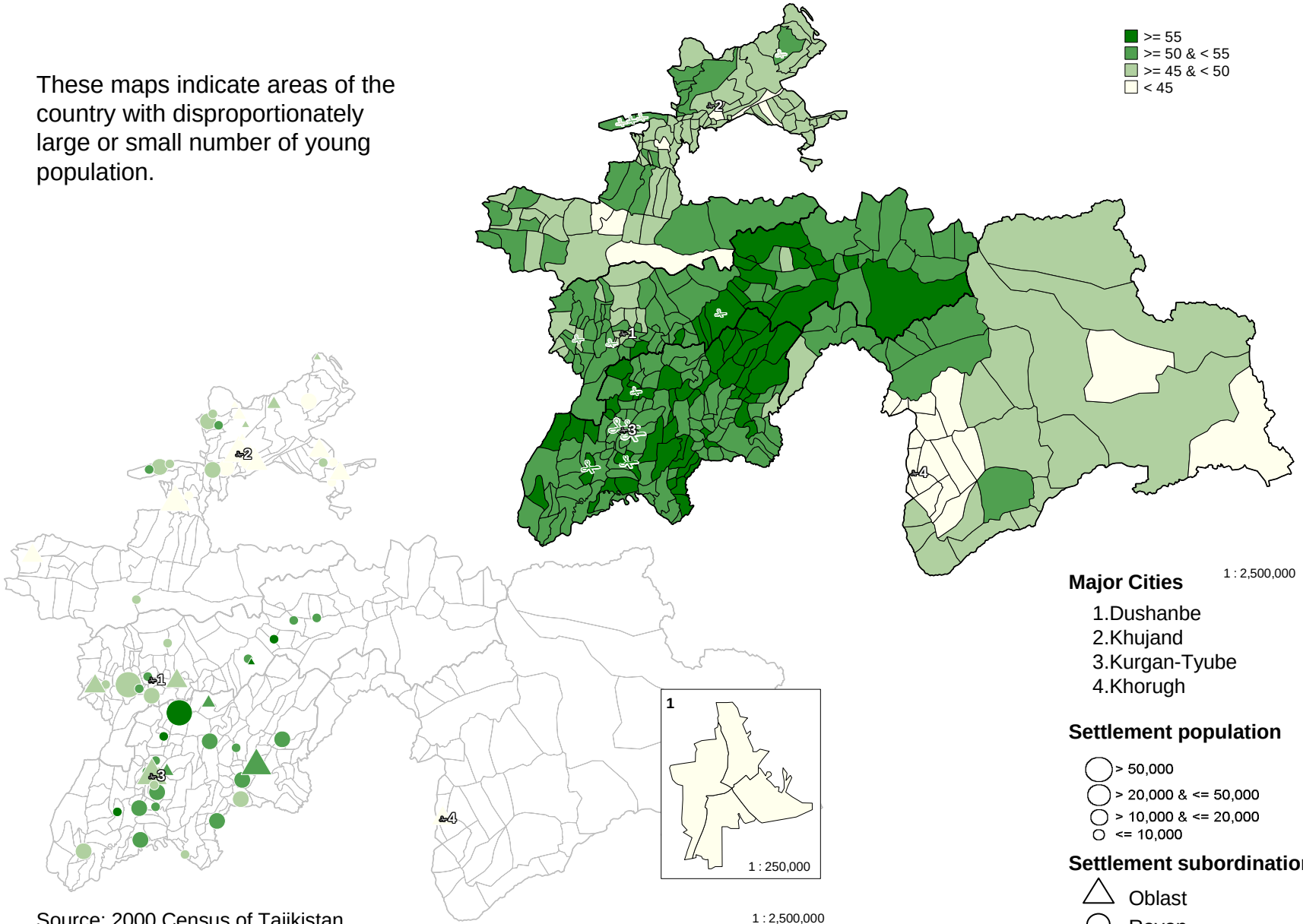
Settlement subordination

Oblast
Rayon

Source: 2000 Census of Tajikistan.

Population under 17 years old (%)

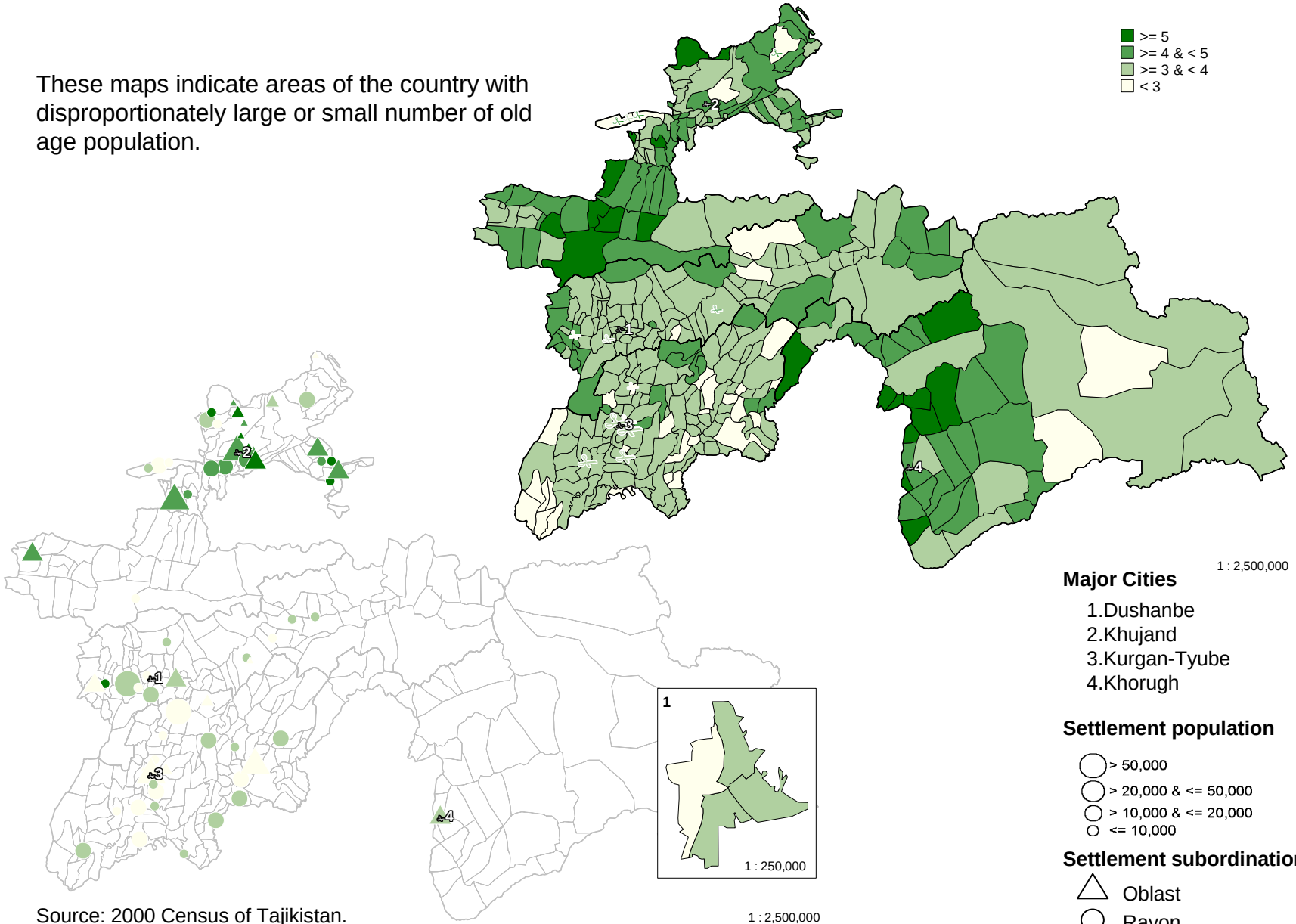
These maps indicate areas of the country with disproportionately large or small number of young population.



Source: 2000 Census of Tajikistan.

Population above 65 years old (%)

These maps indicate areas of the country with disproportionately large or small number of old age population.



Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

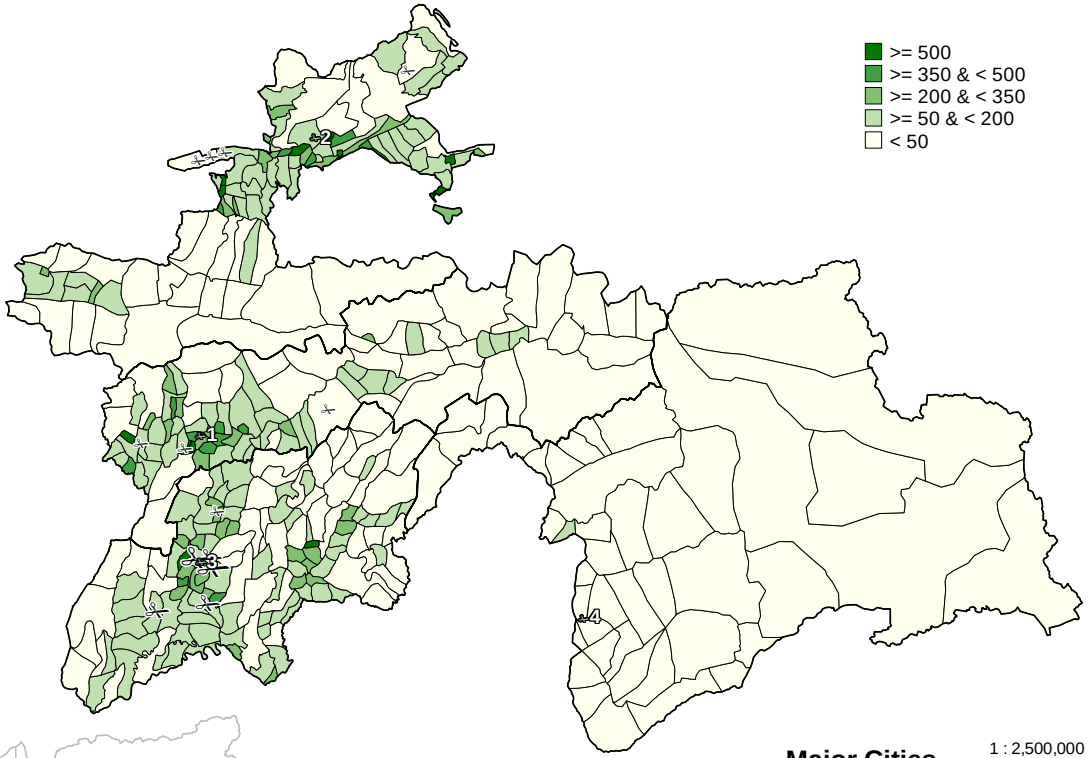
Settlement subordination

Oblast
Rayon

Source: 2000 Census of Tajikistan.

Population Density

This indicator shows the distribution of the population across the country and in particular it shows the number of persons per square kilometre. It highlights where the population lives and its concentration. Settlements are not included in the classification as their symbol size indicates their population (see legend).



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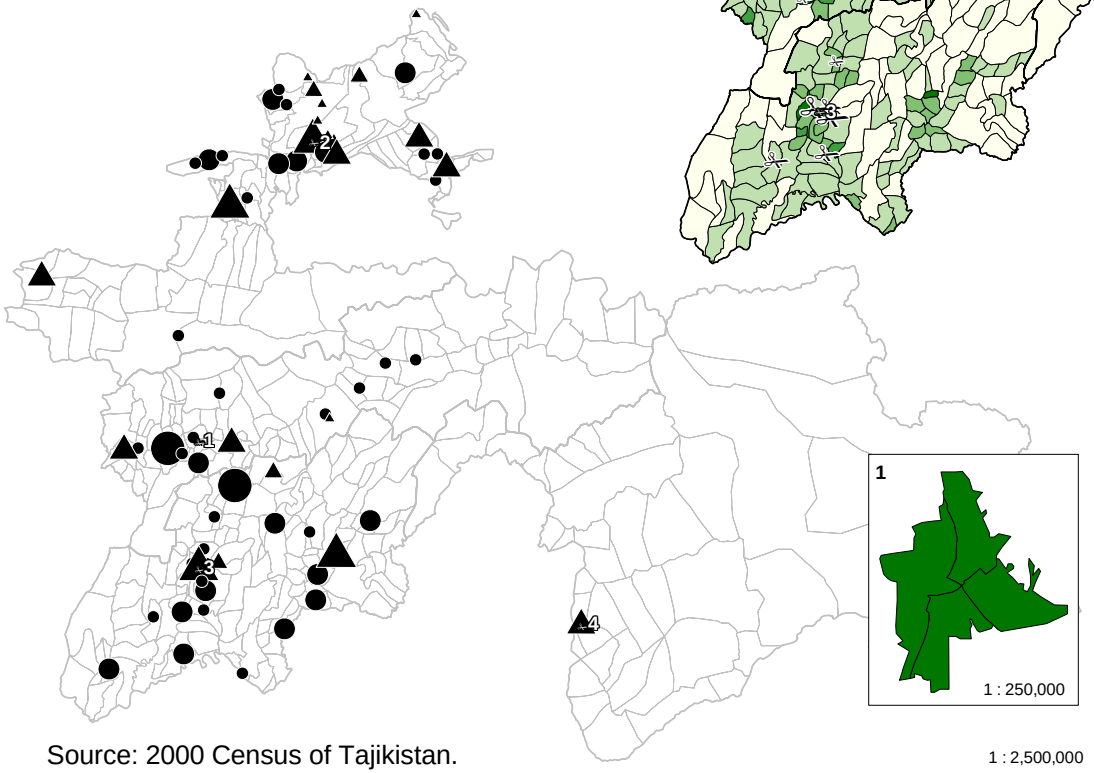


1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

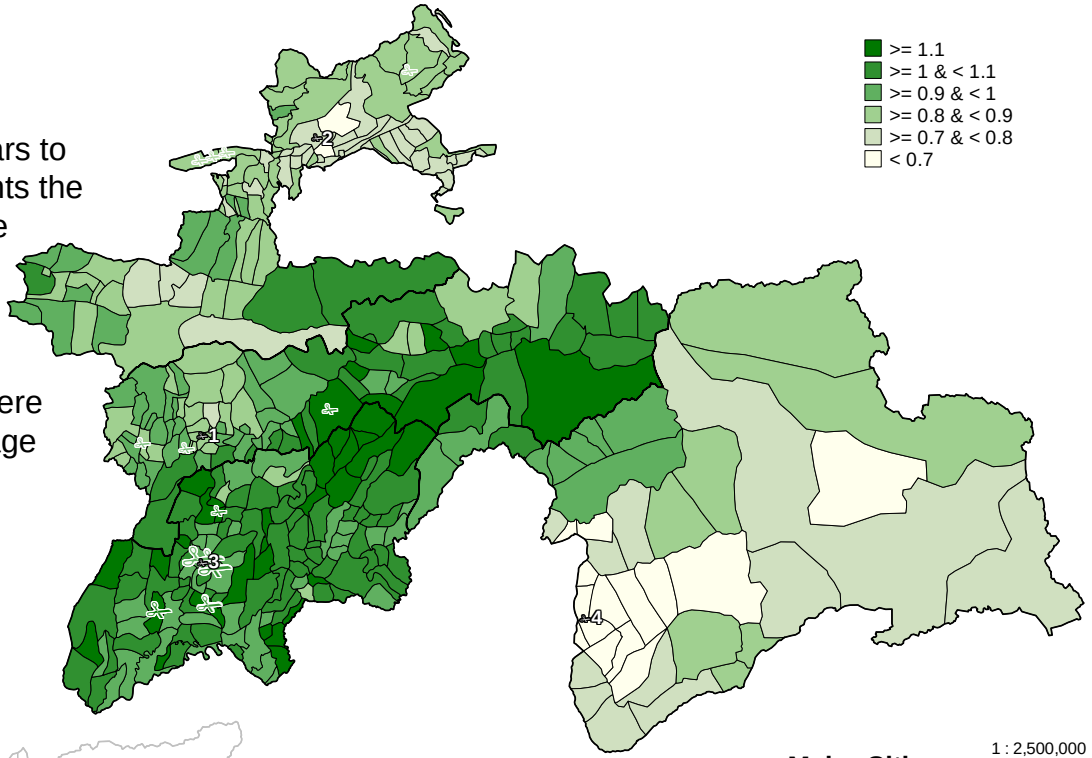
Oblast
Rayon

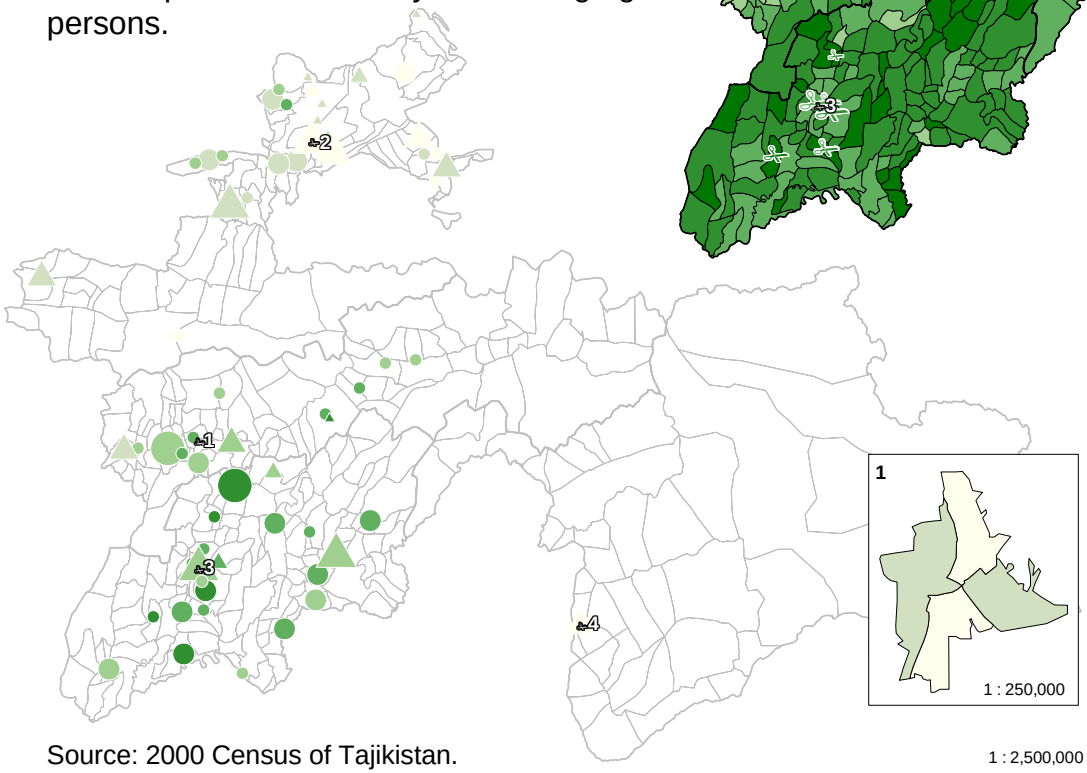
Source: 2000 Census of Tajikistan.

Dependency Ratio

The dependency ratio is the ratio of the population aged under 15 or over 64 years to the population aged 15 to 64. It represents the ratio of the non-working population to the working population.

A dependency ratio of 0.8 means that there are 8 dependents for every 10 working age persons.





Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

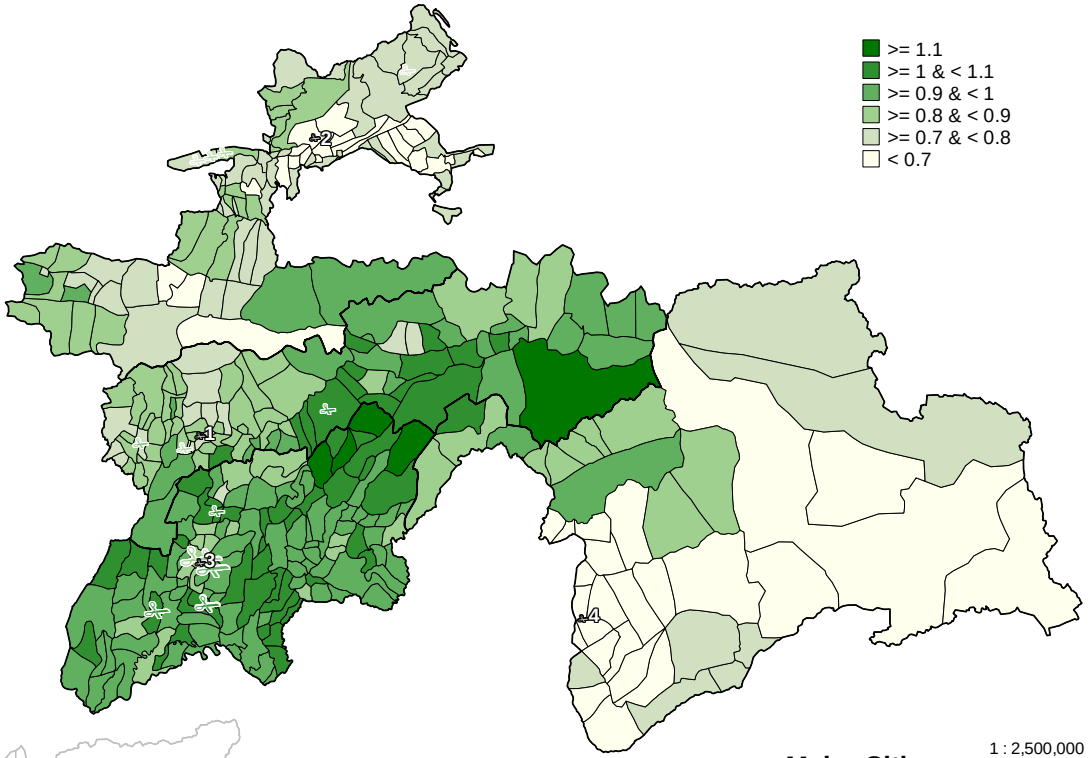
Source: 2000 Census of Tajikistan.

Child Dependency Ratio

The child dependency ratio is defined as the number of children aged 0-14 relative to the total number of people aged 15-64 years. A ratio of 1.0 would indicate that the size of the two age groups is the same, and that there is one person of working age for every child.

A figure greater than 1.0 indicates there is more than one child to each person of working age, and less than 1.0 indicates less than one child to each person of working age.

This ratio provides only a crude indication of the ratio of potential economic providers to dependents, as it takes no account of the economically inactive.



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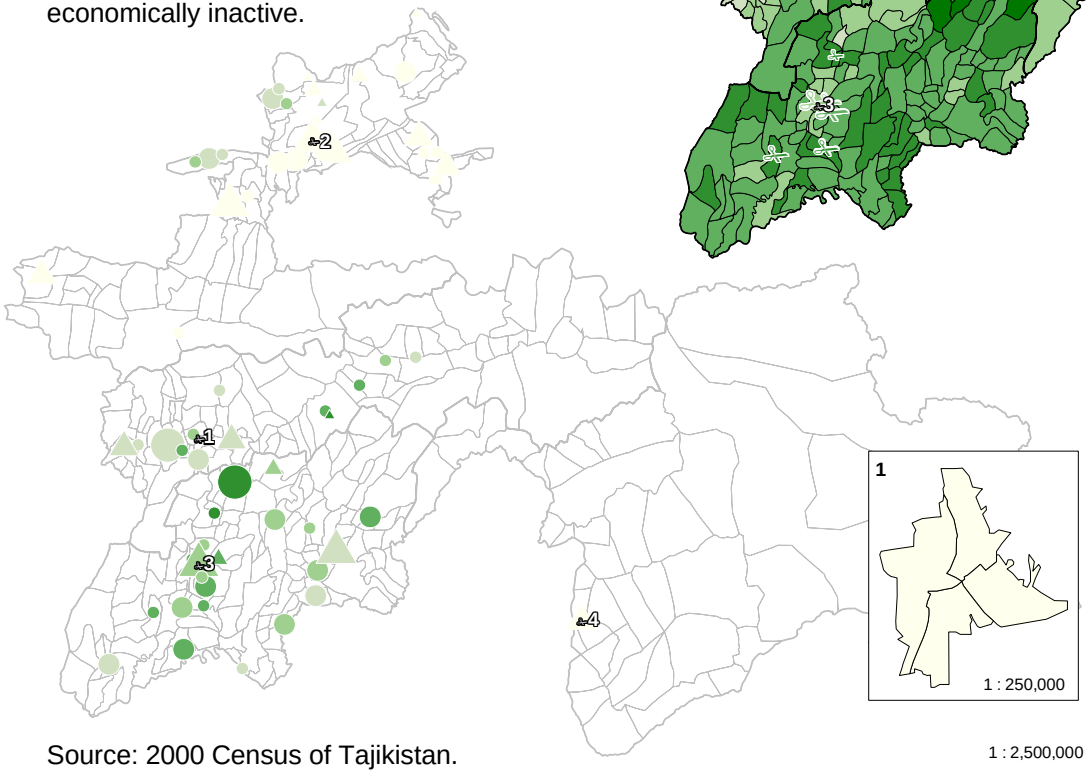


1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

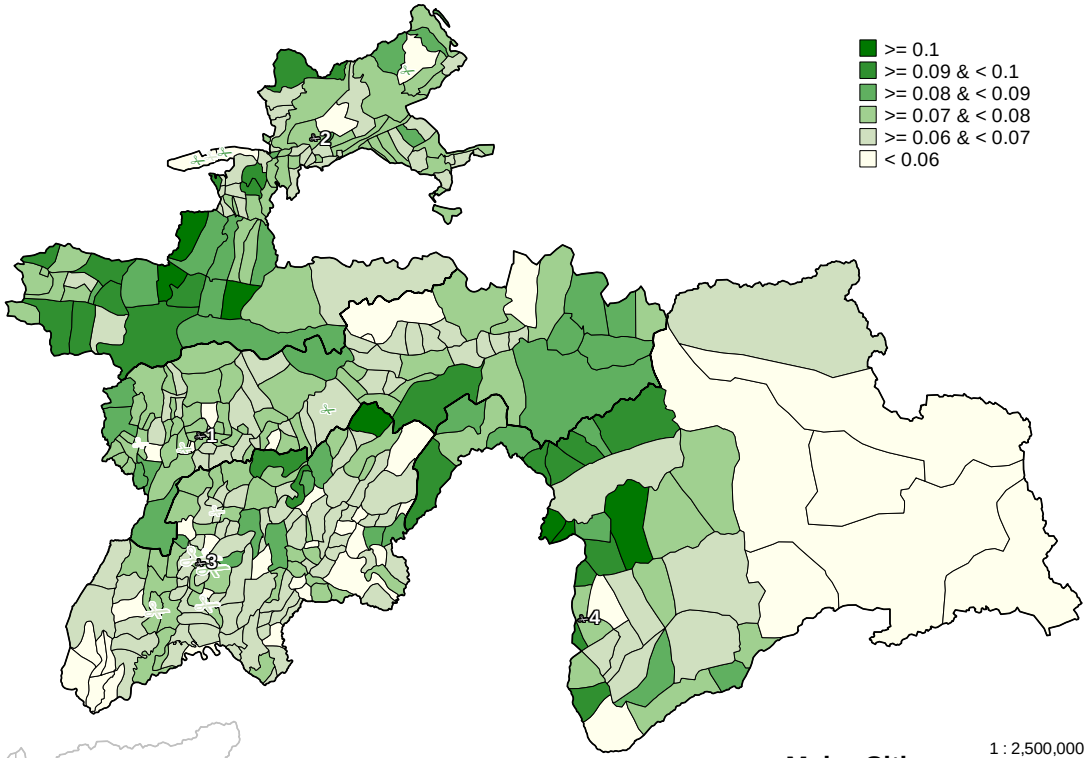
Oblast
Rayon

Source: 2000 Census of Tajikistan.

Old Age Dependency Ratio

The old age dependency ratio is defined as the number of people aged 65 years and older relative to the total number of people aged 15-64 years.

A ratio greater than 1 indicates that there is more than one old age person to each working age person.



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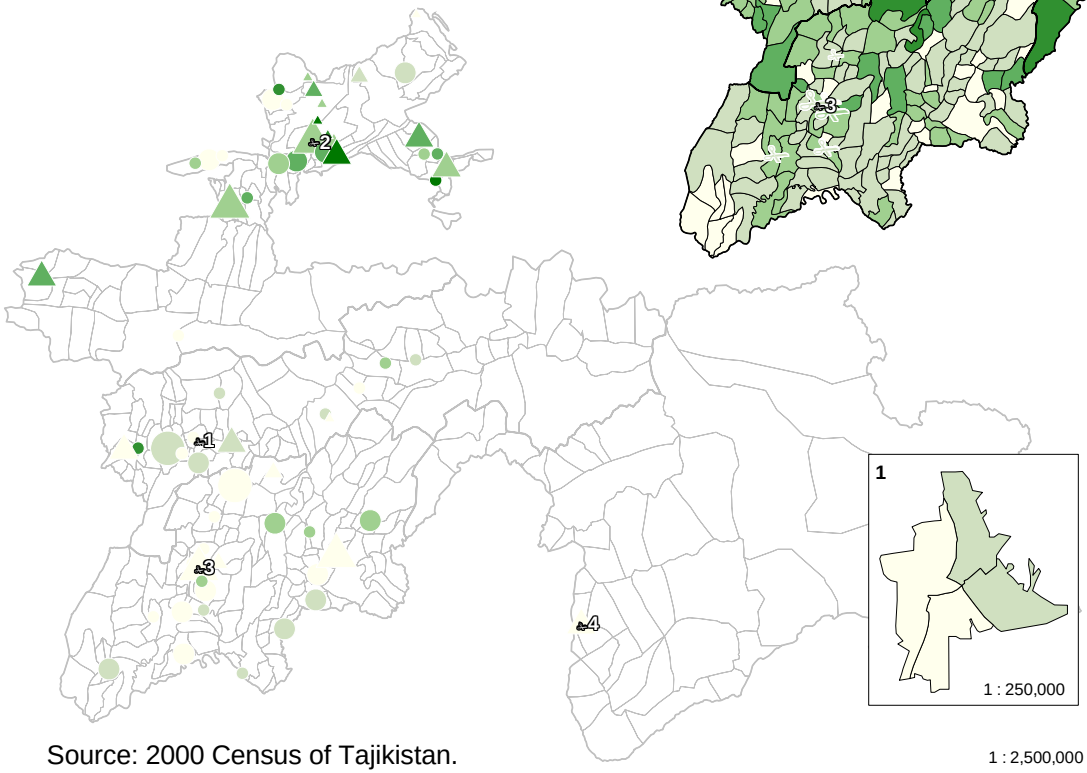


1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

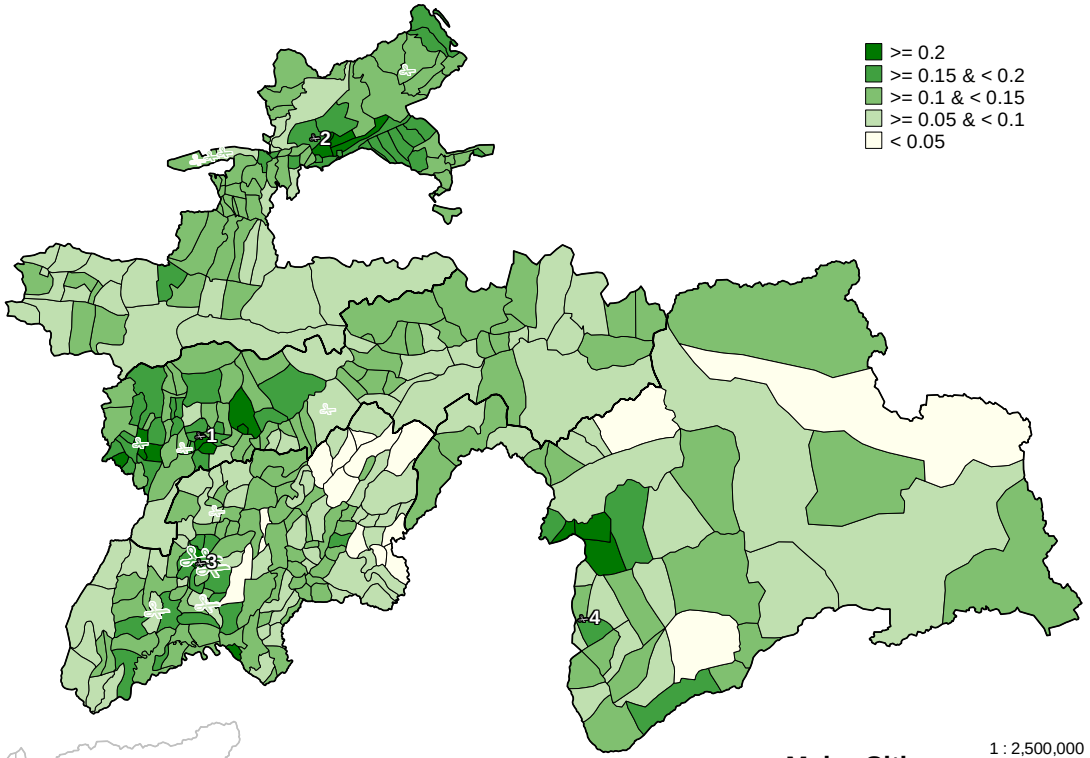
Oblast
Rayon

Source: 2000 Census of Tajikistan.

Female Headed Households (proportion)

Proportion of households headed by a woman.

This indicator shows the area of the country with high or low concentrations of female headed households.



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Major Cities

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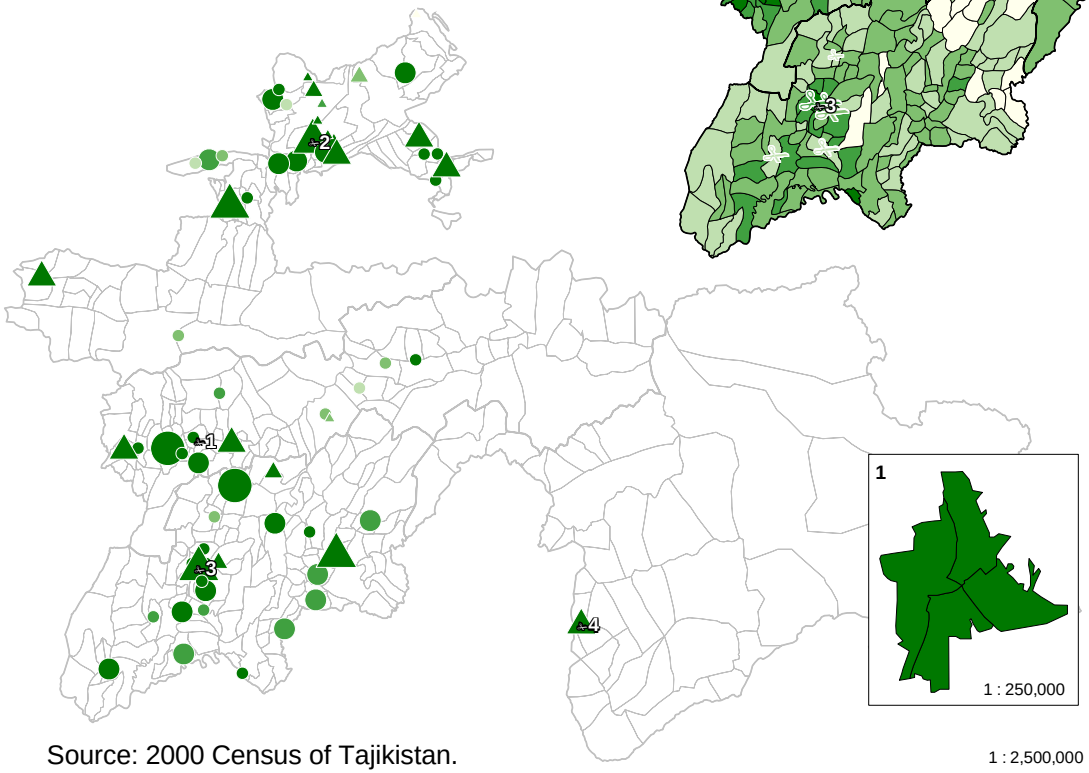


1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Source: 2000 Census of Tajikistan.

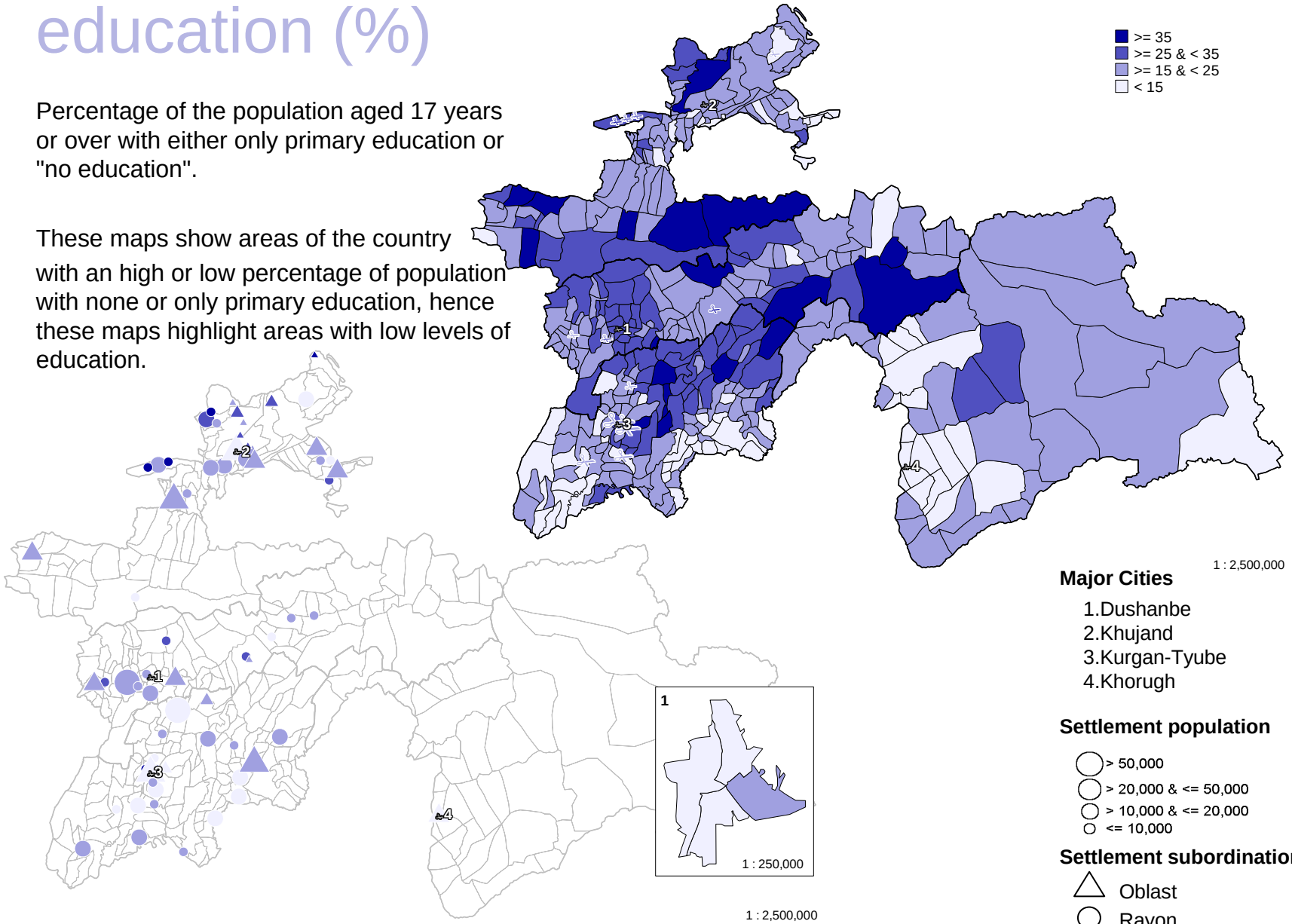
EDUCATION

- Population 17 years plus with primary or no education (%)
- Population 17 years plus with secondary education (%)
- Population 17 years plus with higher education (%)
- Sex ratio of primary education or less

Population 17yrs plus with only primary or no education (%)

Percentage of the population aged 17 years or over with either only primary education or "no education".

These maps show areas of the country with an high or low percentage of population with none or only primary education, hence these maps highlight areas with low levels of education.



Major Cities

1.Dushanbe
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4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

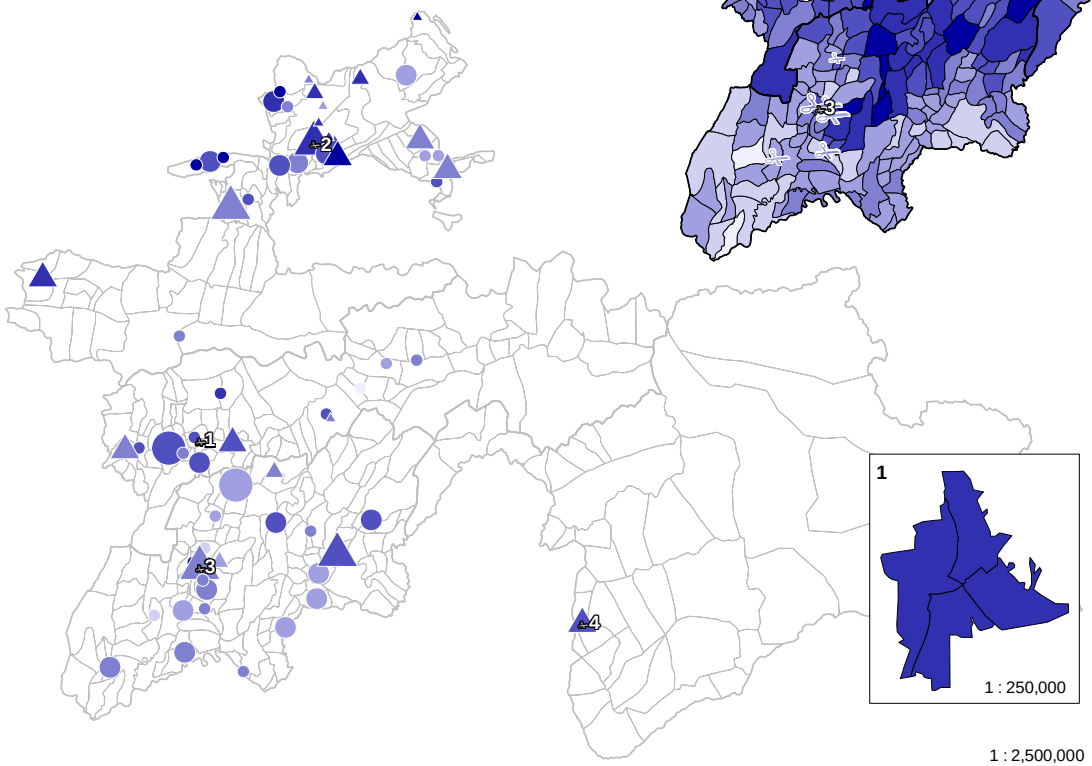
Oblast
Rayon

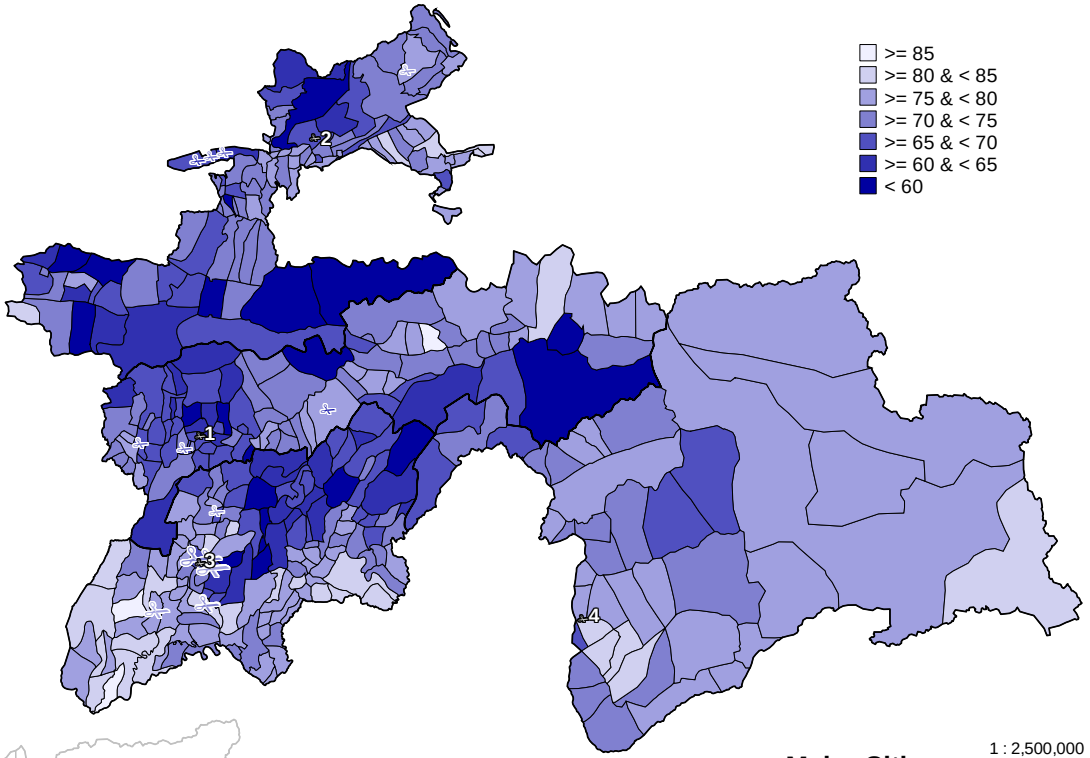
Source: 2000 Census of Tajikistan.

Population 17yrs plus with secondary education (%)

Percentage of the population 17 years or over with secondary education.

These maps show area of the country with an high or low percentage of population with higher education, hence these maps highlight areas with high level of education.





Major Cities

1.Dushanbe
2.Khujand
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4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

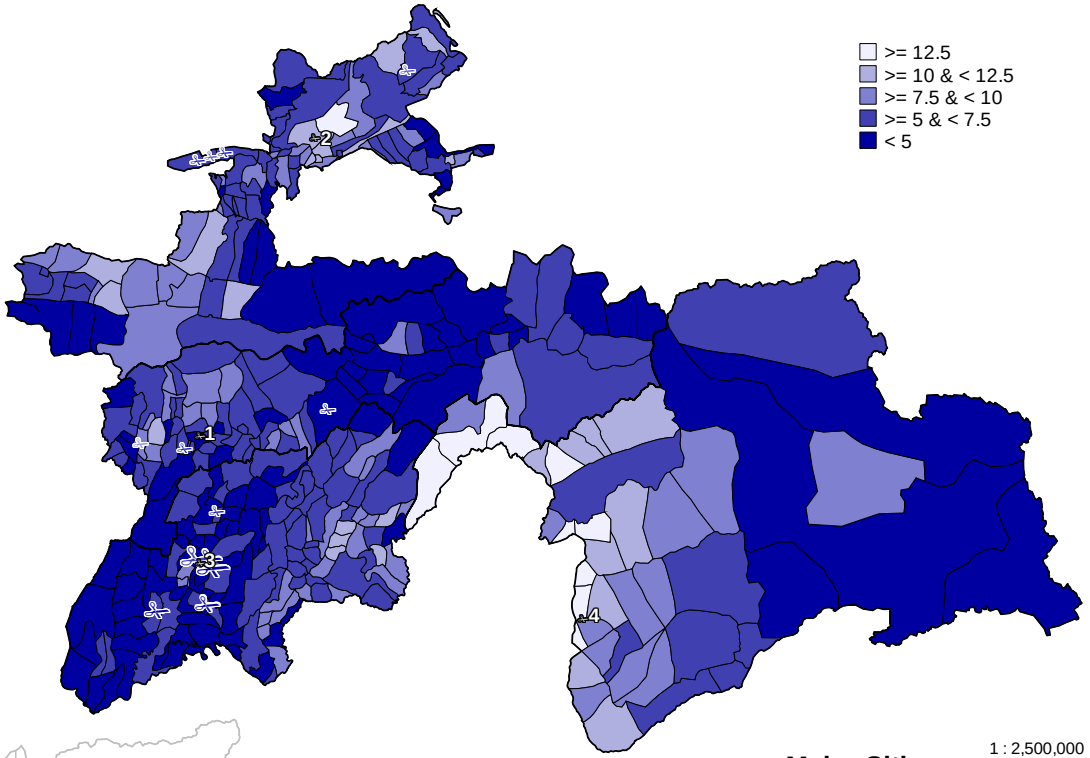
Oblast
Rayon

Source: 2000 Census of Tajikistan.

Population 17yrs plus with higher education (%)

Percentage of the population 17 years or over with higher education.

These maps show area of the country with a high or low percentage of population with higher education, hence these maps highlight areas with the highest level of education.



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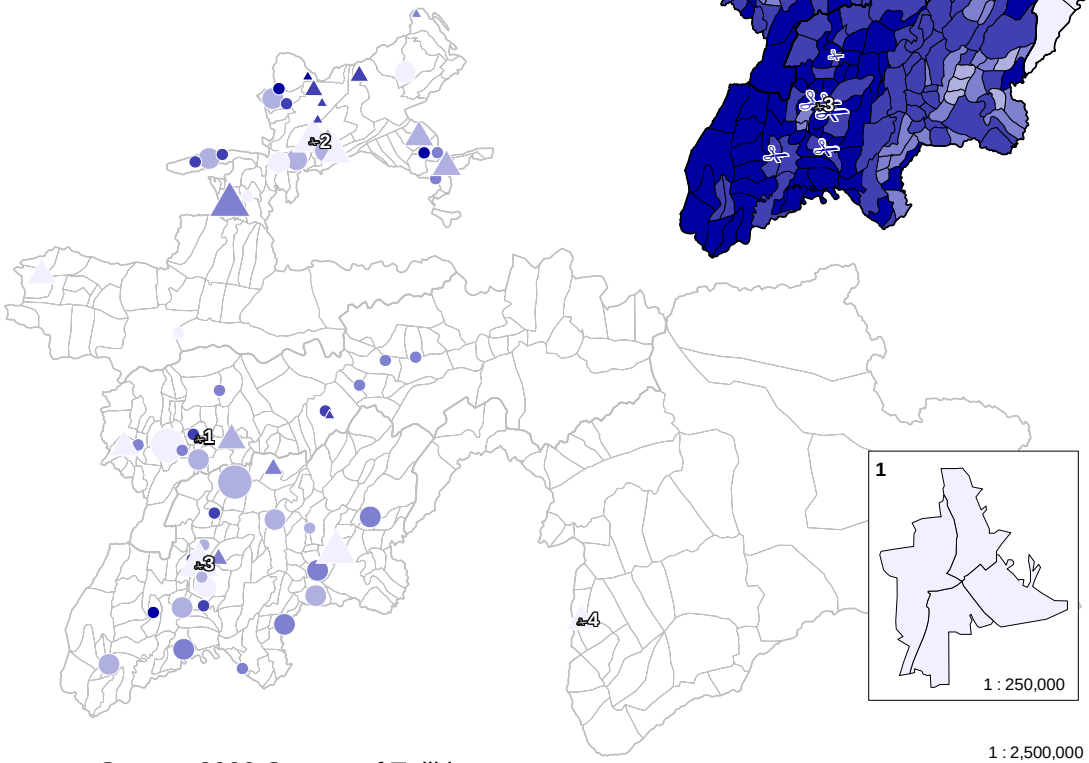

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Major Cities

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Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

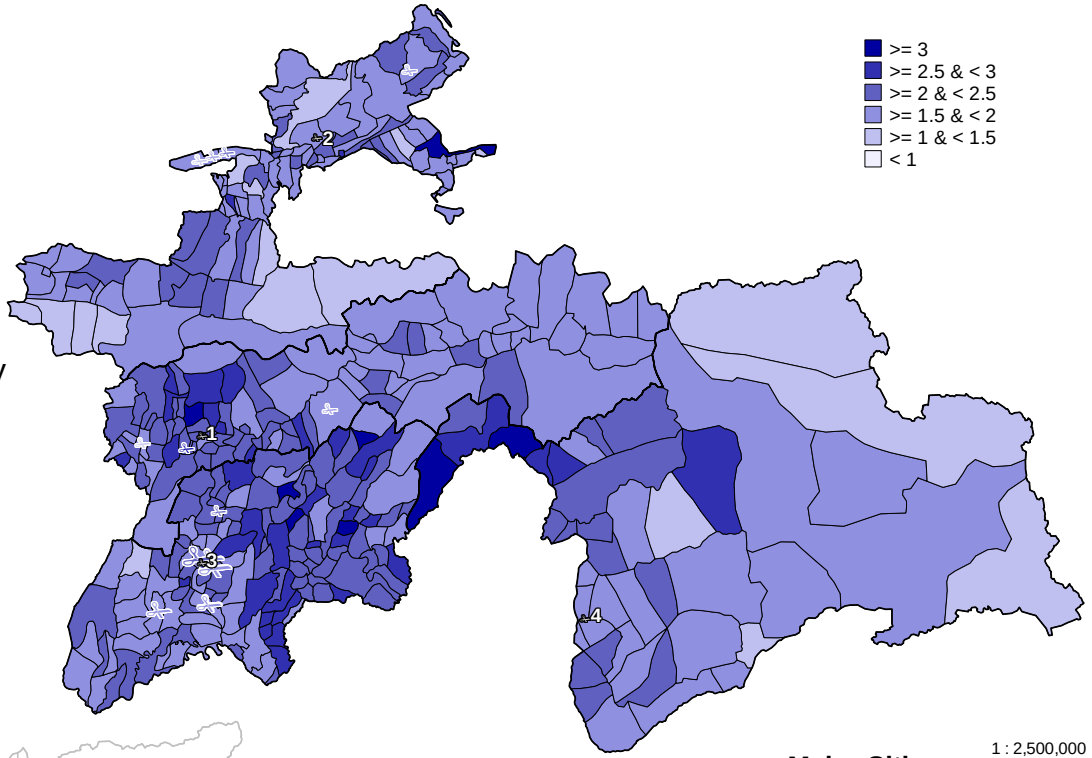
Oblast
Rayon

Source: 2000 Census of Tajikistan.

Sex Ratio of primary education or less

This indicator represents the ratio of the total number of women with "primary or less education" to the total number of men with "primary or less" education.

A ratio above one indicates gender inequality in education, with a higher proportion of women having only primary or no education compared to men.



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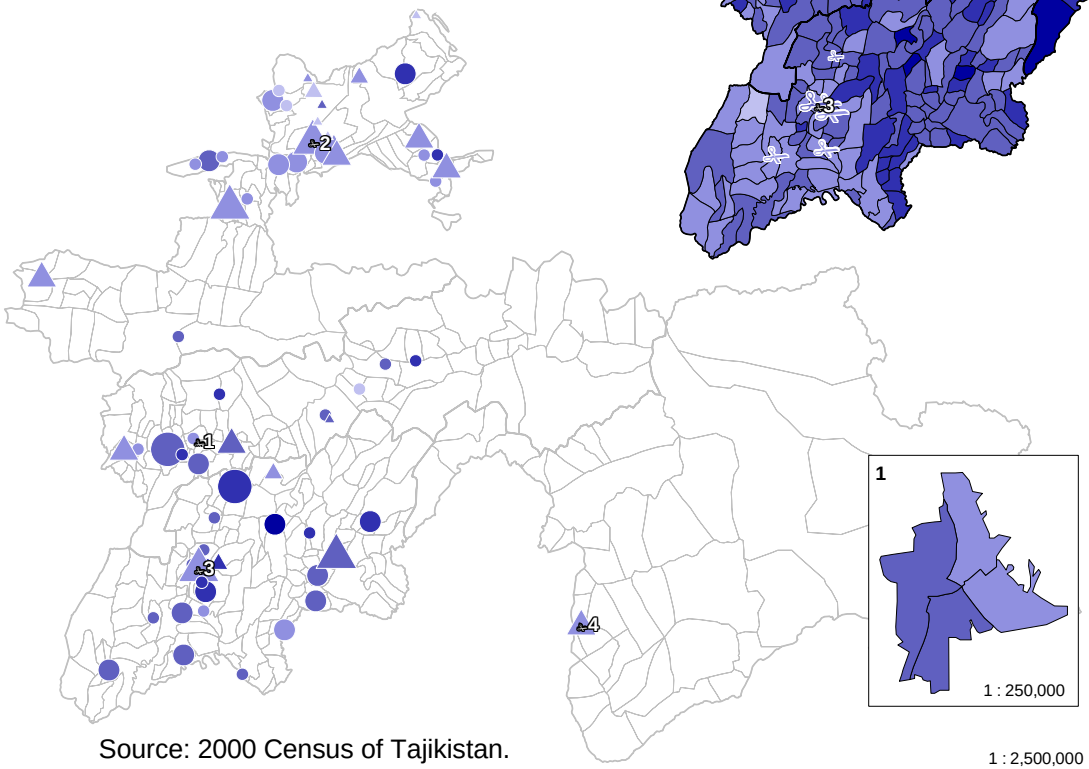


1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Source: 2000 Census of Tajikistan.

HEALTH

- Under 5 Mortality Rate

NOTE ON THE CALCULATION OF THE INDICATOR

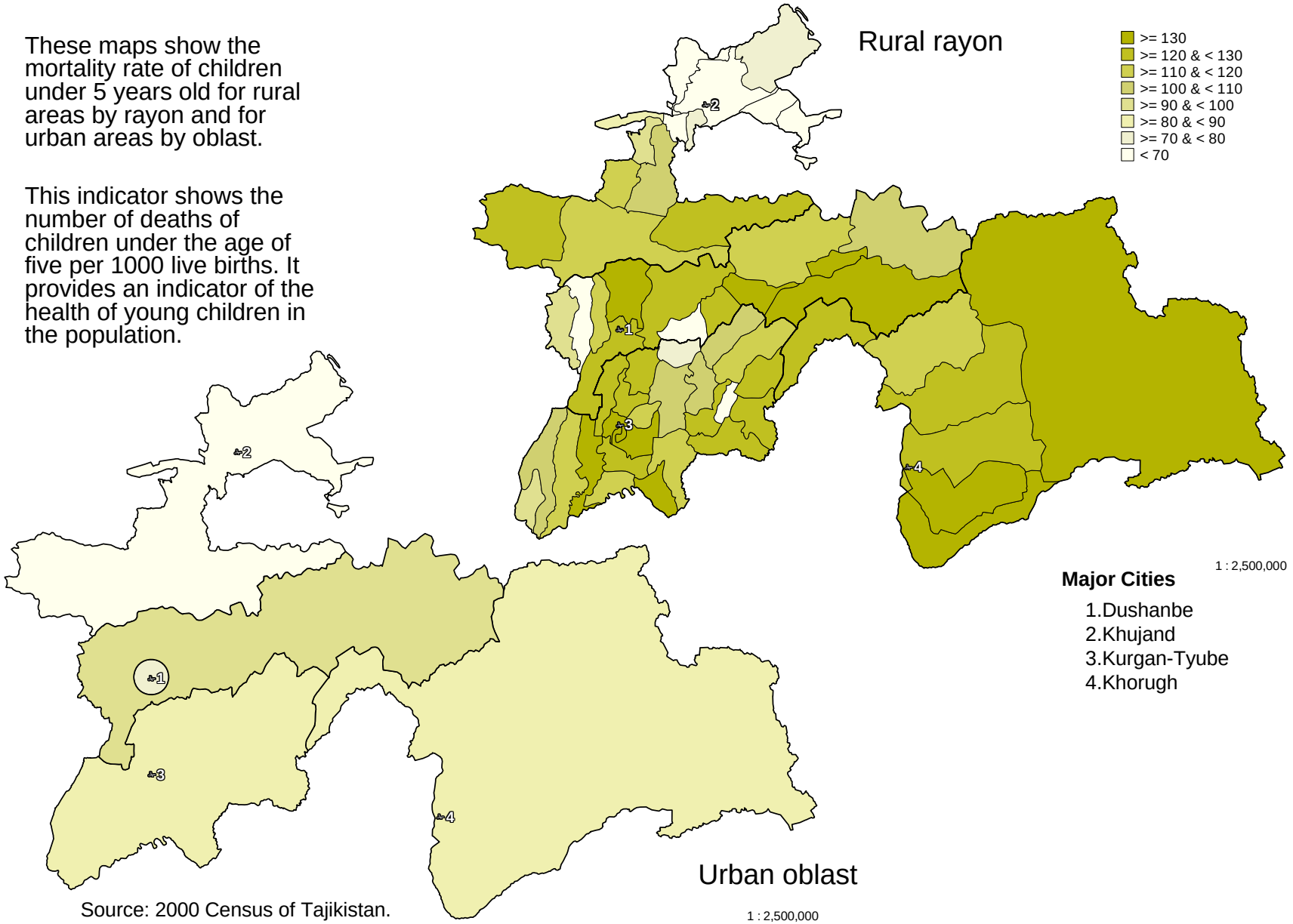
In order to estimate the Under 5 Mortality Rate (U5MR), it is necessary to have information on both the number of deaths and the size of the population at risk of dying. The former is usually derived from vital registration system and the latter from the census. However, in many countries the information which allows deriving direct estimates of mortality are often subject to errors due to the underreporting in the vital registration system. Hence, the estimates of U5MR which come from the vital registration system produce mortality levels which are well below survey estimate. The debate on where the true U5MR lie is still ongoing.

The U5MR presented in this Atlas has been produced using a indirect estimation technique and information on children ever born and children surviving available in the last Census. We provide estimates of U5MR for rural area at Rayon level and for urban area at the oblast level plus Dushanbe. This indirect estimation technique was developed by William Brass in the 1960s. This method provides estimations of the probability of dying between birth and exact age 5.

Under 5 Mortality Rate

These maps show the mortality rate of children under 5 years old for rural areas by rayon and for urban areas by oblast.

This indicator shows the number of deaths of children under the age of five per 1000 live births. It provides an indicator of the health of young children in the population.



Source: 2000 Census of Tajikistan.

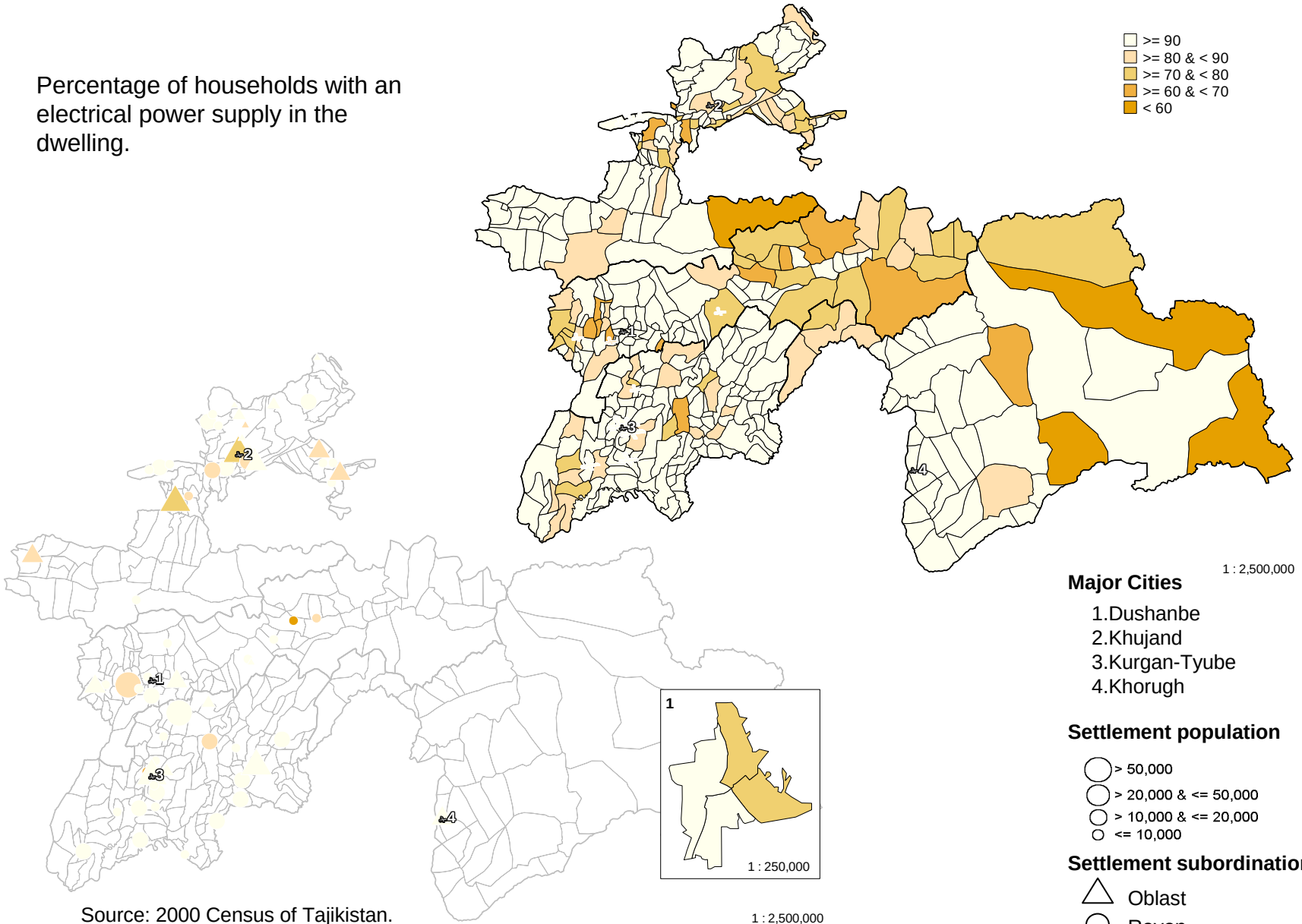
Health

HOUSEHOLD AMENITIES

- Electricity
- Gas
- Water
- Telephone

Electricity

Percentage of households with an electrical power supply in the dwelling.



Source: 2000 Census of Tajikistan.

Major Cities

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Settlement population

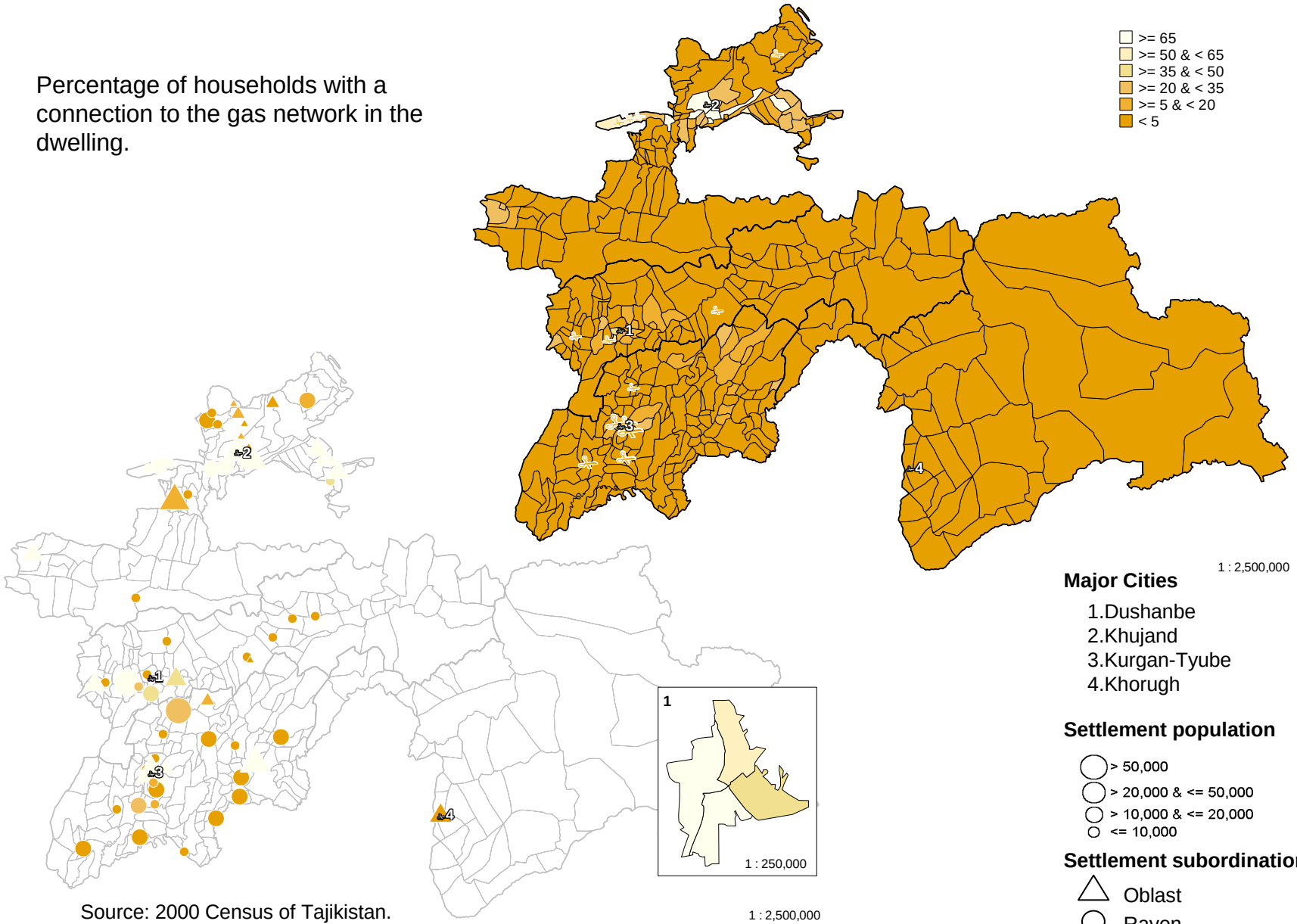
> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Gas

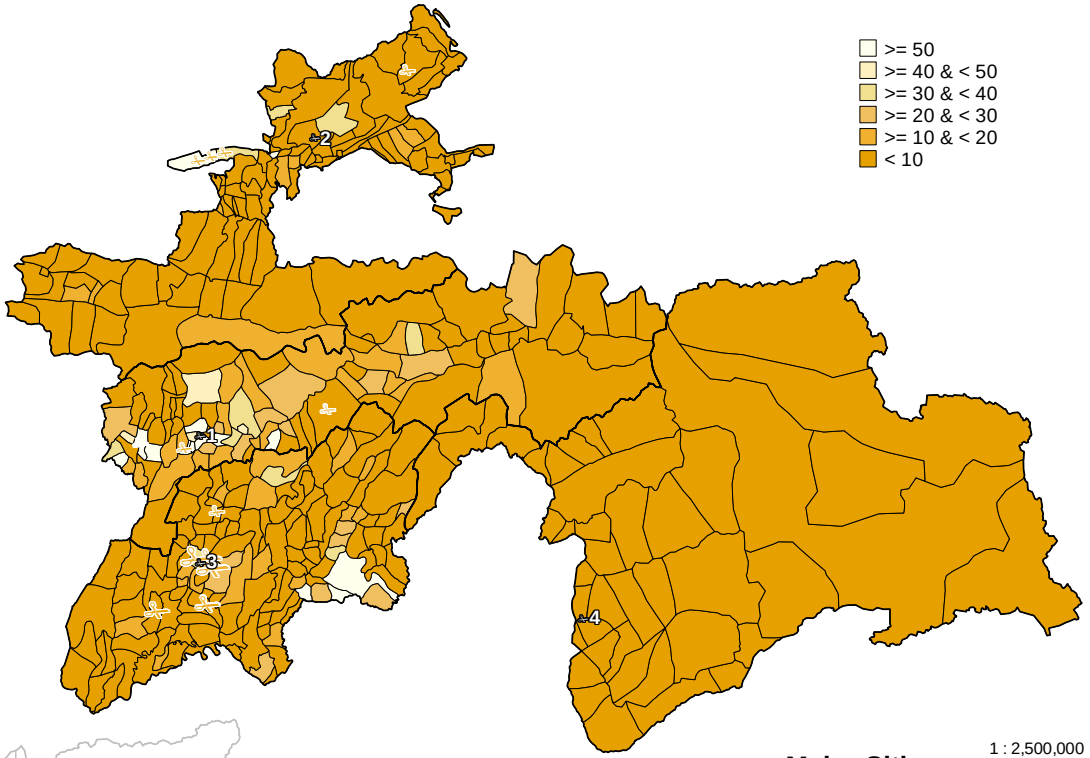
Percentage of households with a connection to the gas network in the dwelling.



Source: 2000 Census of Tajikistan.

Water

Percentage of households with a water pipe in the dwelling.



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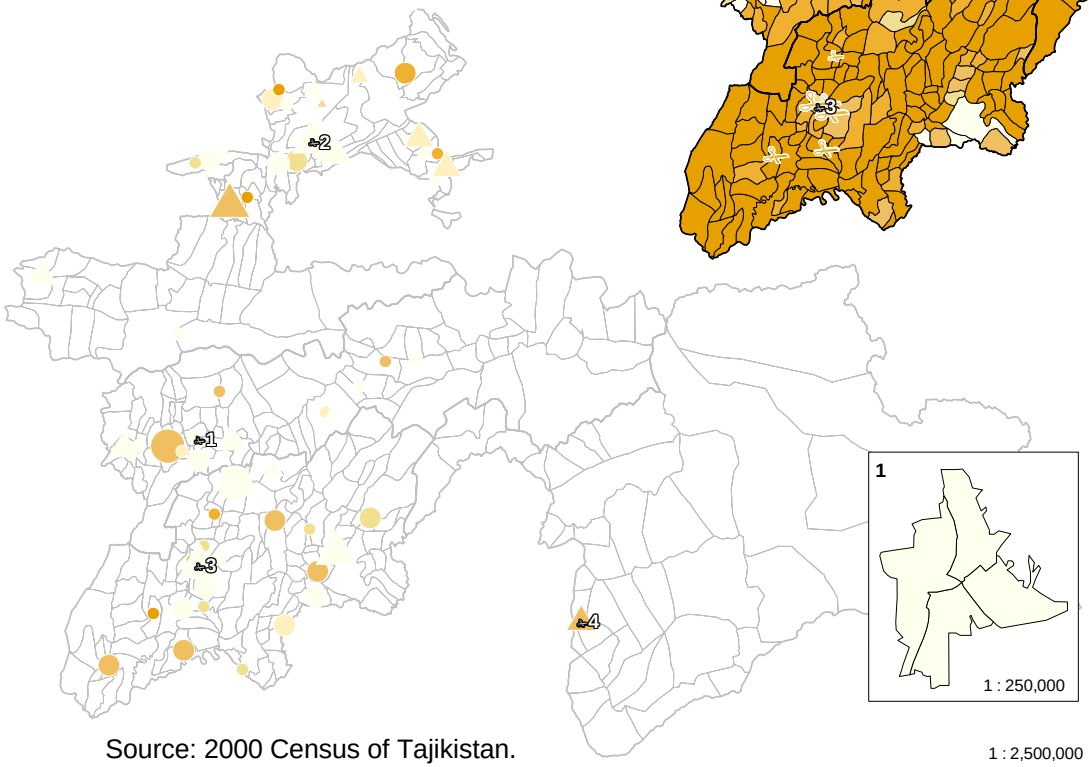

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> 50,000
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> 10,000 & <= 20,000
<= 10,000

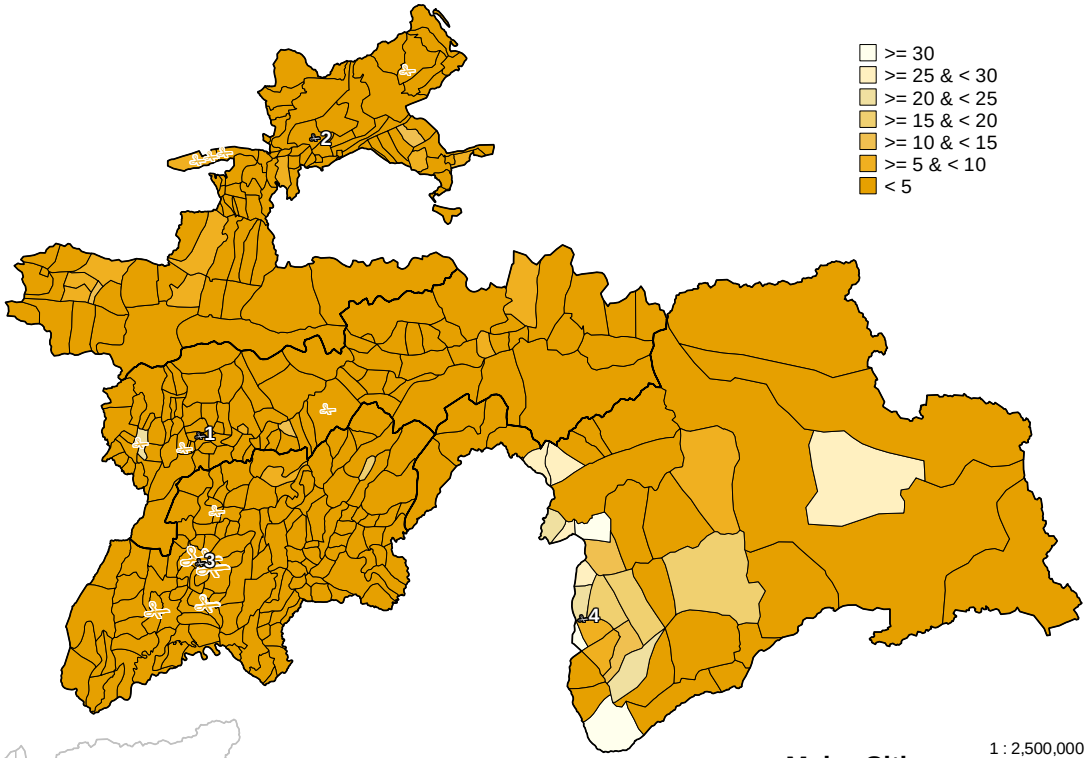
Settlement subordination

Oblast
Rayon

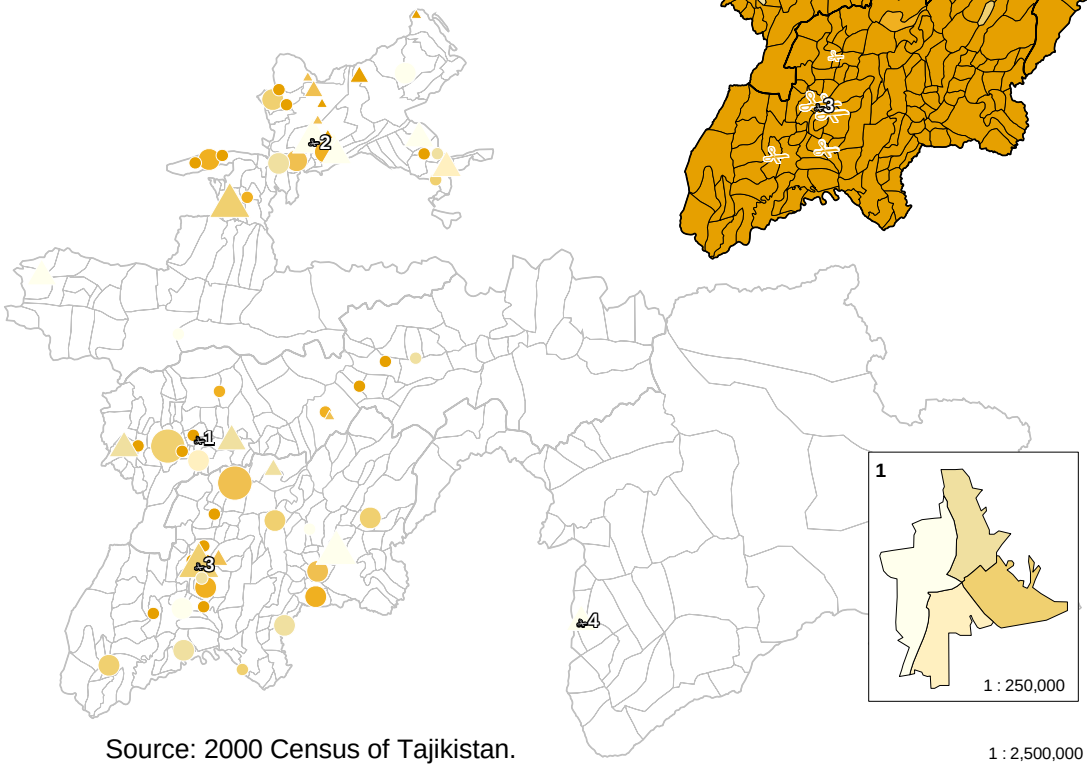
Source: 2000 Census of Tajikistan.

Telephone

Percentage of households with a telephone in the dwelling.



1 : 2,500,000



1 : 2,500,000

Source: 2000 Census of Tajikistan.

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

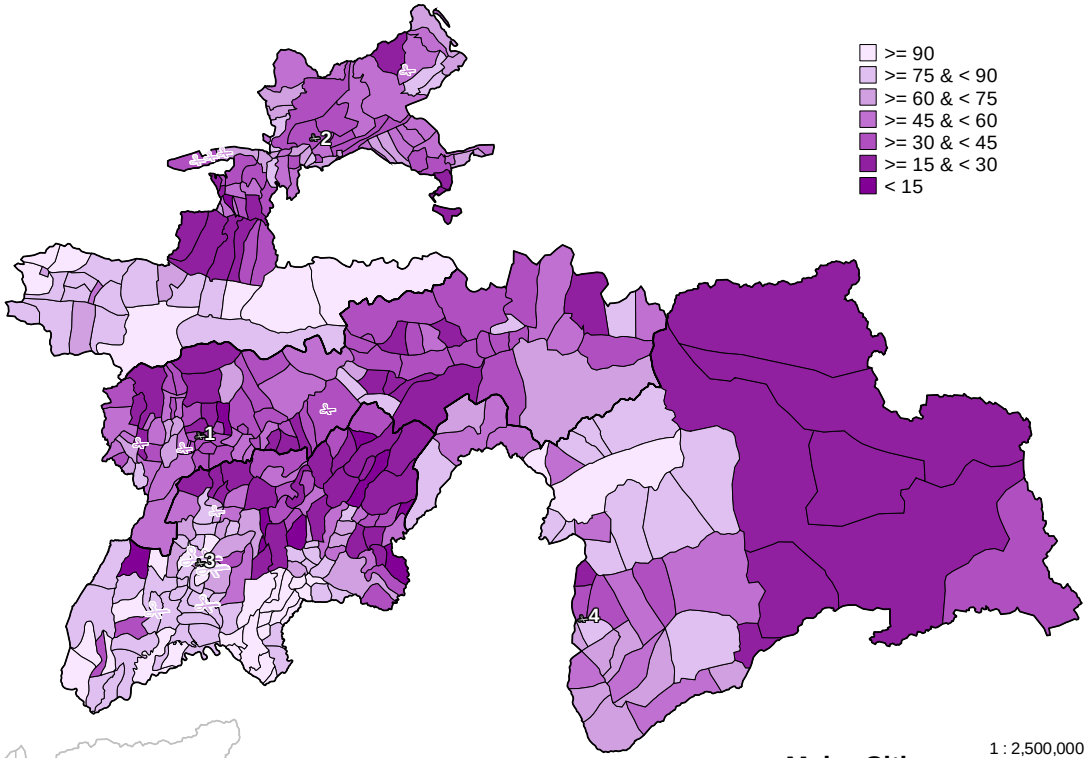
ECONOMIC

- Women 15-57 economically active (%).
- Men 15-62 economically active (%)
- Working age population economically active (%)

Women 15-57 economically active (%)

For women in Tajikistan, the working age population generally refers to women 15-57 years old. This indicator looks at the percentage of women within this age group that are economically active.

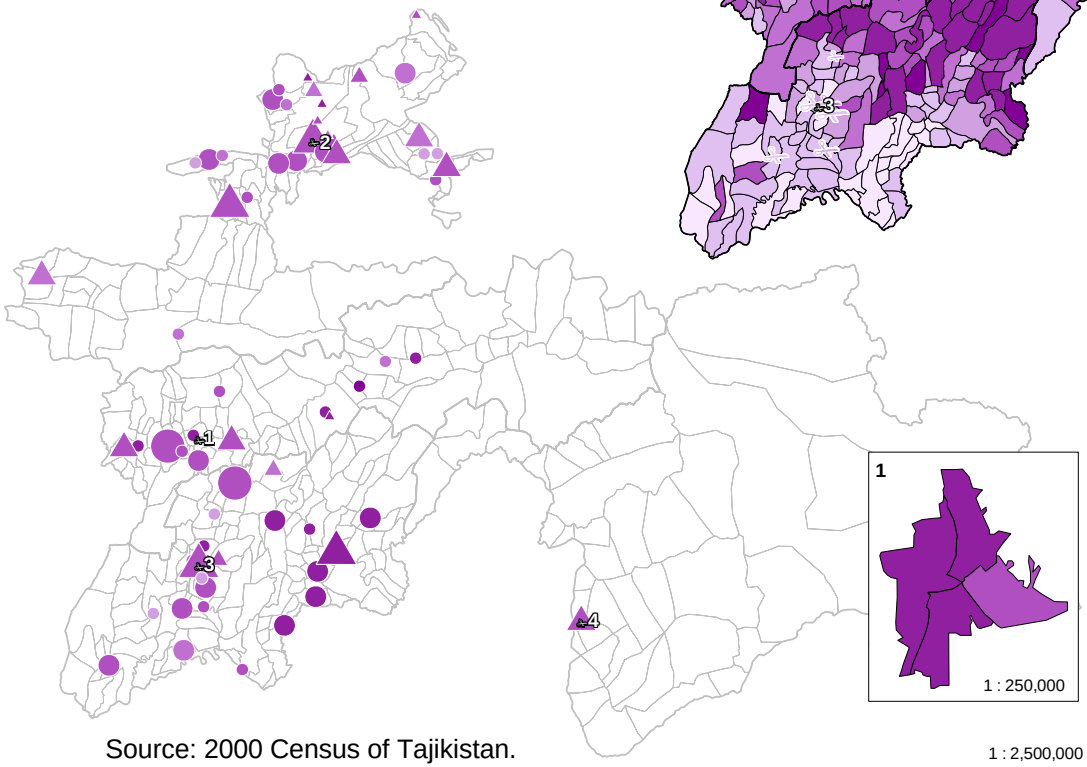
The economically active are defined as those women who are either working as an employee, a member of a producers' cooperative, an employer or working on individual basis.



1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh



1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

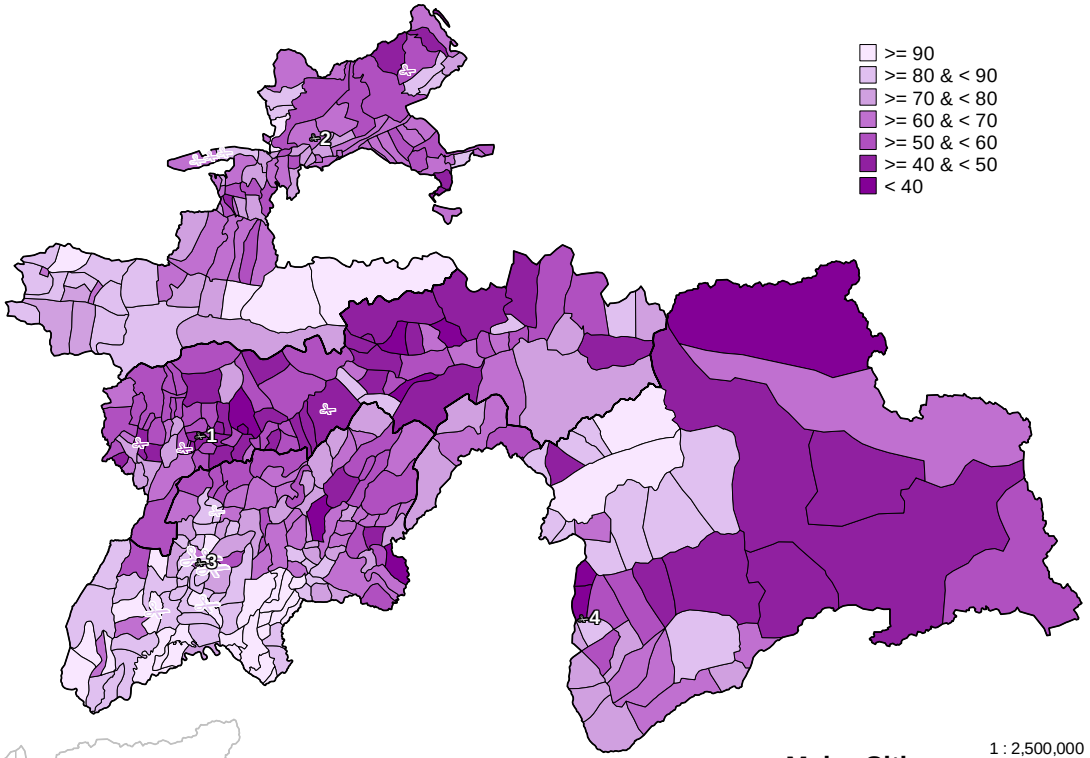
Oblast
Rayon

Source: 2000 Census of Tajikistan.

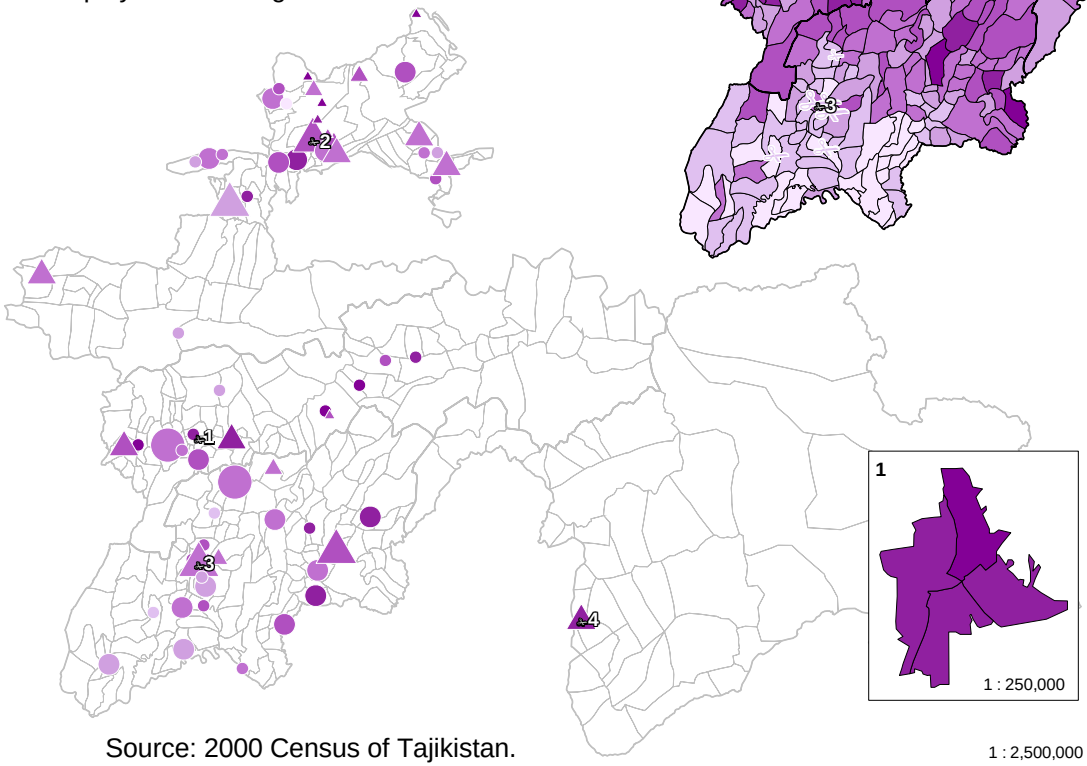
Men 15-62 economically active (%)

For men in Tajikistan, the working age population generally refers to men 15-62 years old. This indicator looks at the percentage of men within this age group that are economically active.

The economically active are defined as those men who are either working as an employee, a member of a producers' cooperative, an employer or working on individual basis.



1 : 2,500,000



1 : 2,500,000

Source: 2000 Census of Tajikistan.

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

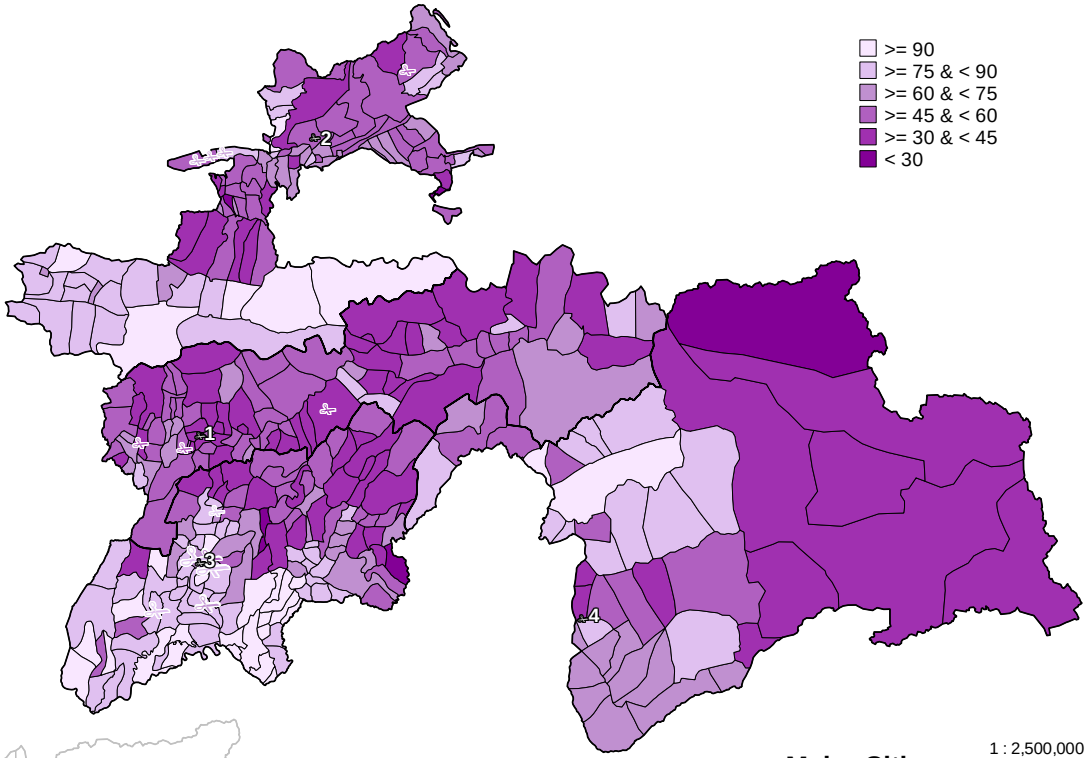
Oblast
Rayon

Population economically active (%)

This indicator looks at the percentage of the working age population that are economically active.

For men, the working age population refers to men 15-62 years old, whereas for women it refers to women 15-57 years old.

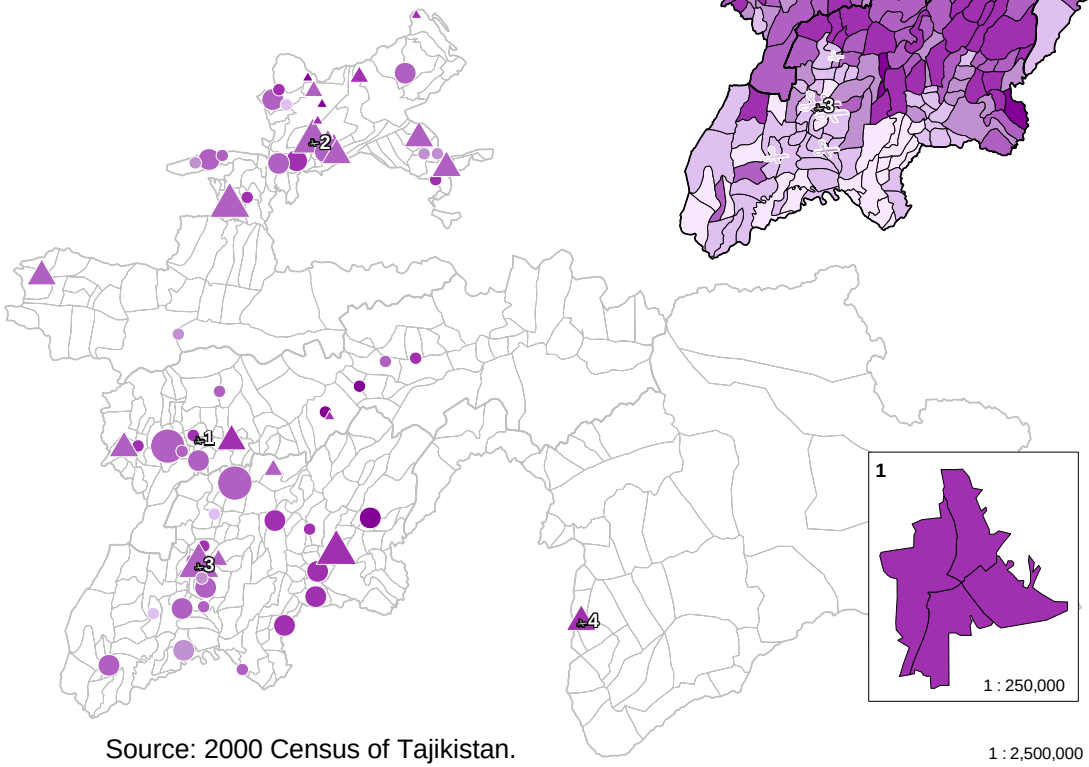
The economically active are defined as those men and women who are either working as an employee, a member of a producers' cooperative, an employer or working on an individual basis.



1 : 2,500,000

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh



1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Source: 2000 Census of Tajikistan.

POVERTY

- Poverty Headcount - absolute poverty line
- Relative Poverty Headcount – relative poverty line
- Per capita monthly consumption expenditure
- Per capita monthly food consumption expenditure

METHODOLOGICAL NOTE

The following poverty indicators have been estimated by combining the 2000 Census of Tajikistan and the 2003 Tajikistan Living Standard Survey, through the application of the statistical poverty mapping technique developed by Elbers and Lanjouw from the World Bank.

For more details see:
"Technical Note: Creating a Poverty Map for Tajikistan" Baschieri A. and Falkingham J. (2005)
http://www.s3ri.soton.ac.uk/publications/applications.php

Two poverty indicators are available:

- Per capita consumption (total consumption aggregated)
- Per capita food consumption

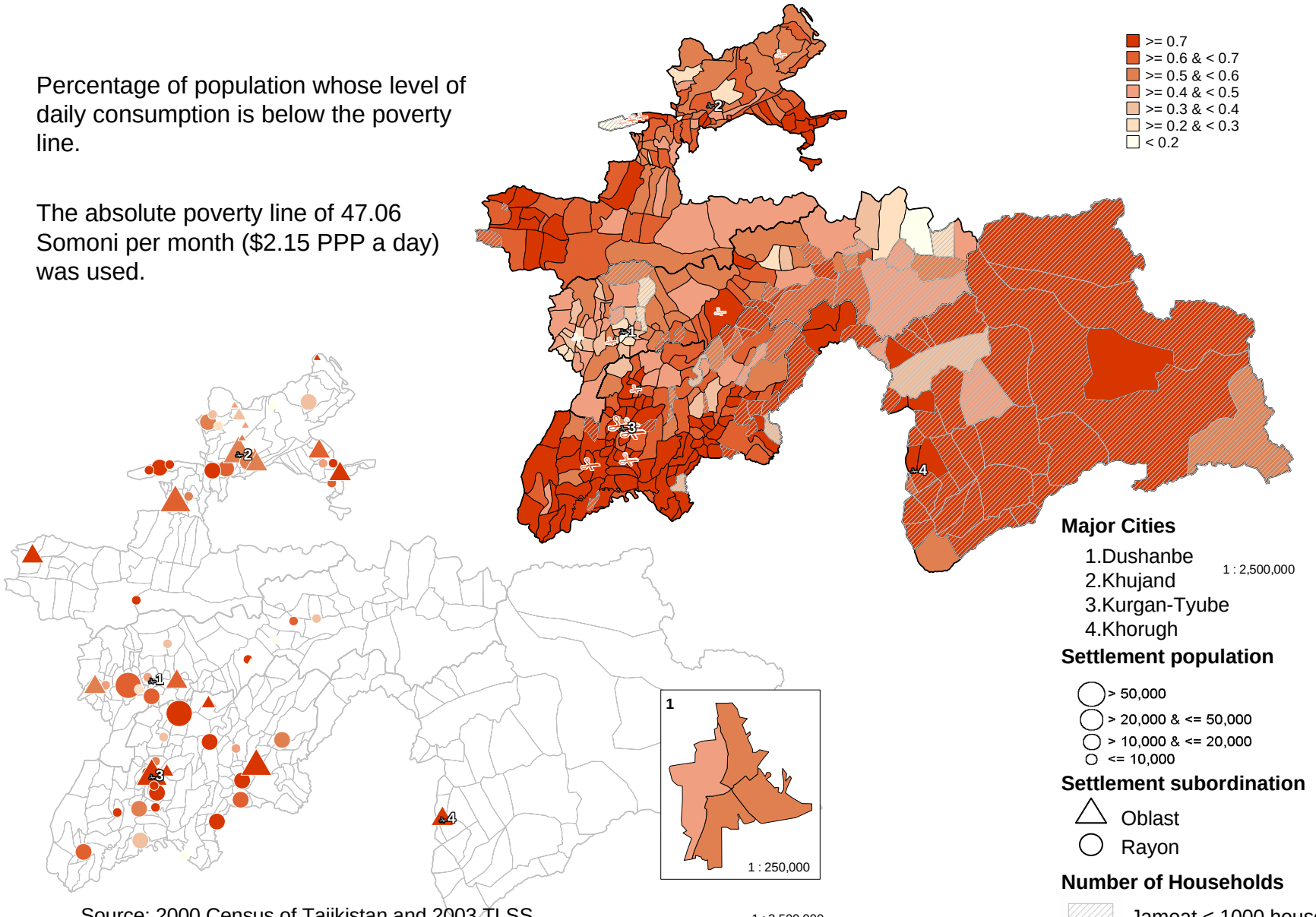
Two poverty lines are available:

- Absolute poverty line 47.06 Somoni ($2.15PPP)
- Relative poverty line 40th percentile point

Poverty headcount – absolute poverty line

Percentage of population whose level of daily consumption is below the poverty line.

The absolute poverty line of 47.06 Somoni per month ($2.15 PPP a day) was used.



Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Number of Households

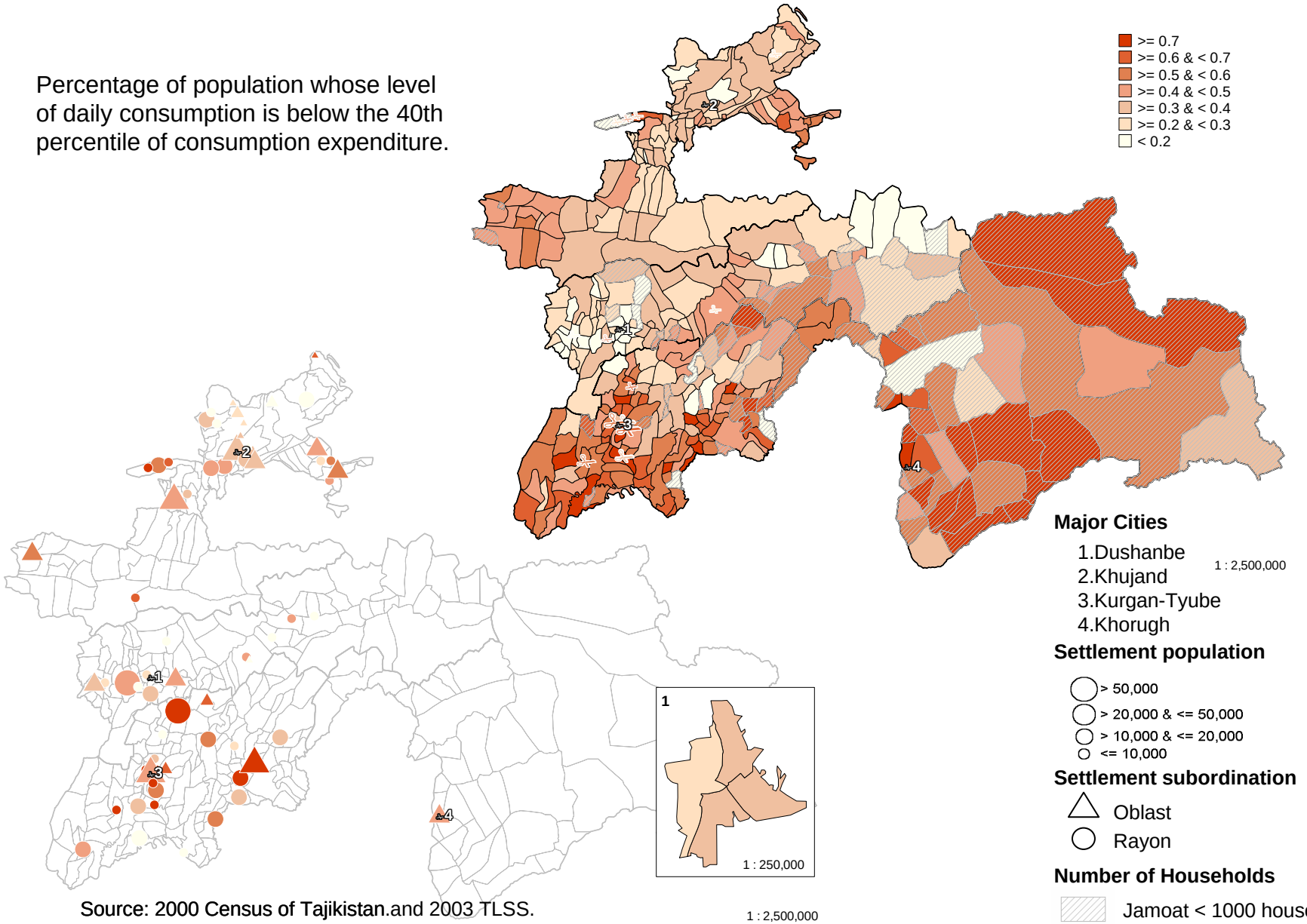
Jamoat < 1000 households

Source: 2000 Census of Tajikistan and 2003 TLSS.

Poverty

Poverty headcount – relative poverty line

Percentage of population whose level of daily consumption is below the 40th percentile of consumption expenditure.



Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

1 : 2,500,000

Settlement population

> 50,000
> 20,000 & <= 50,000
> 10,000 & <= 20,000
<= 10,000

Settlement subordination

Oblast
Rayon

Number of Households

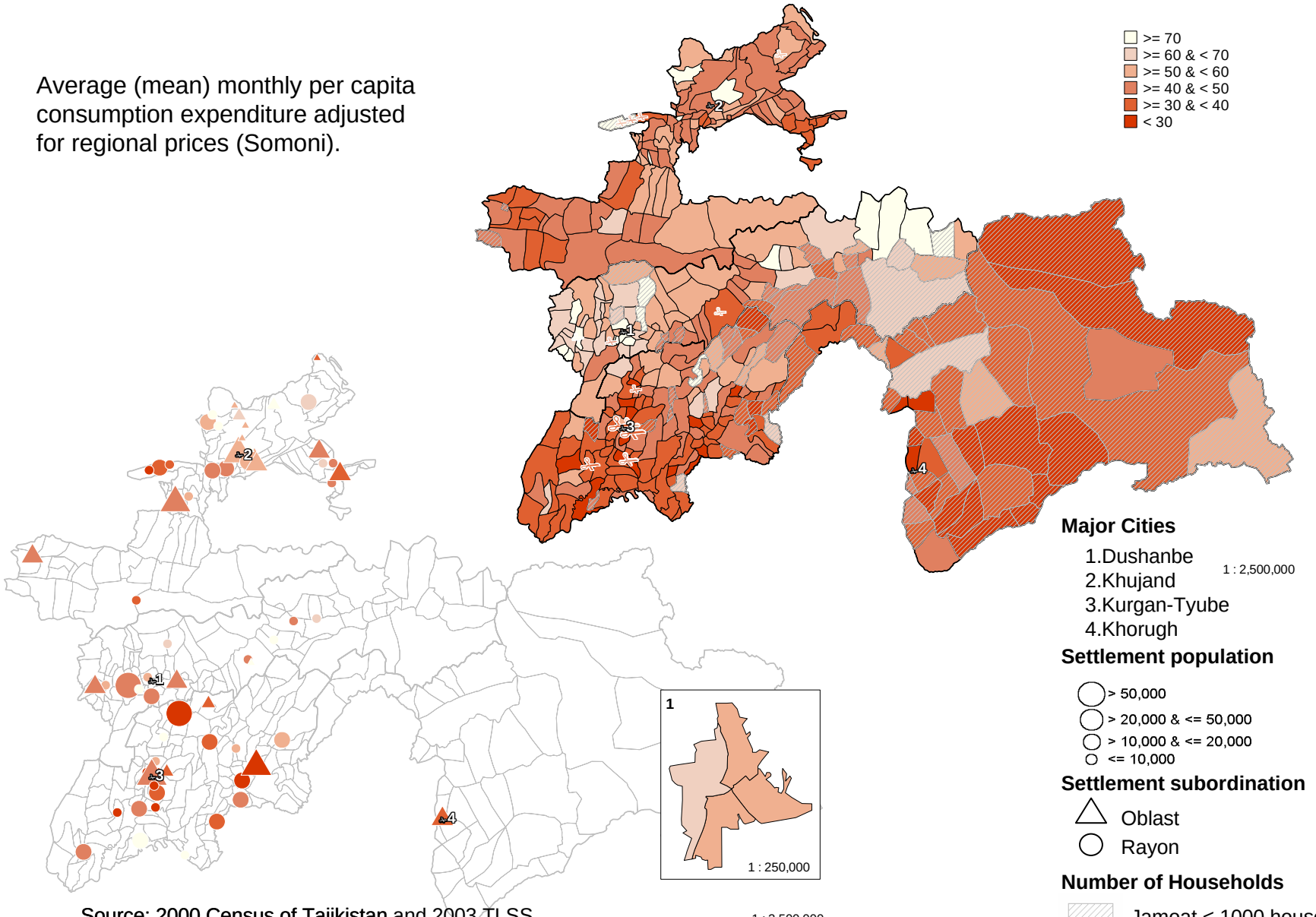
Jamoat < 1000 households

Source: 2000 Census of Tajikistan.and 2003 TLSS.

Poverty

Per capita monthly consumption expenditure

Average (mean) monthly per capita consumption expenditure adjusted for regional prices (Somoni).

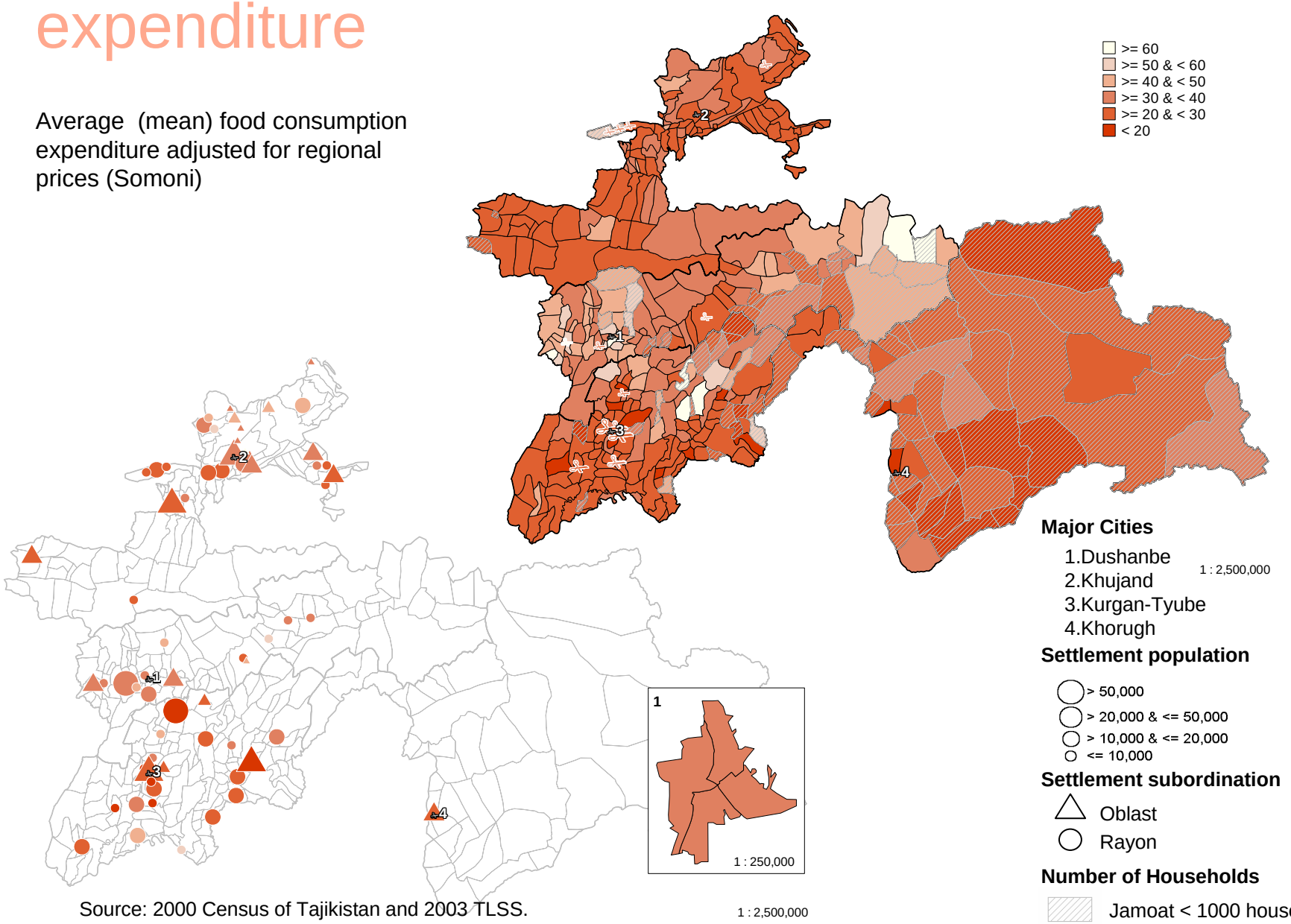


Source: 2000 Census of Tajikistan.and 2003 TLSS.

1 : 2,500,000

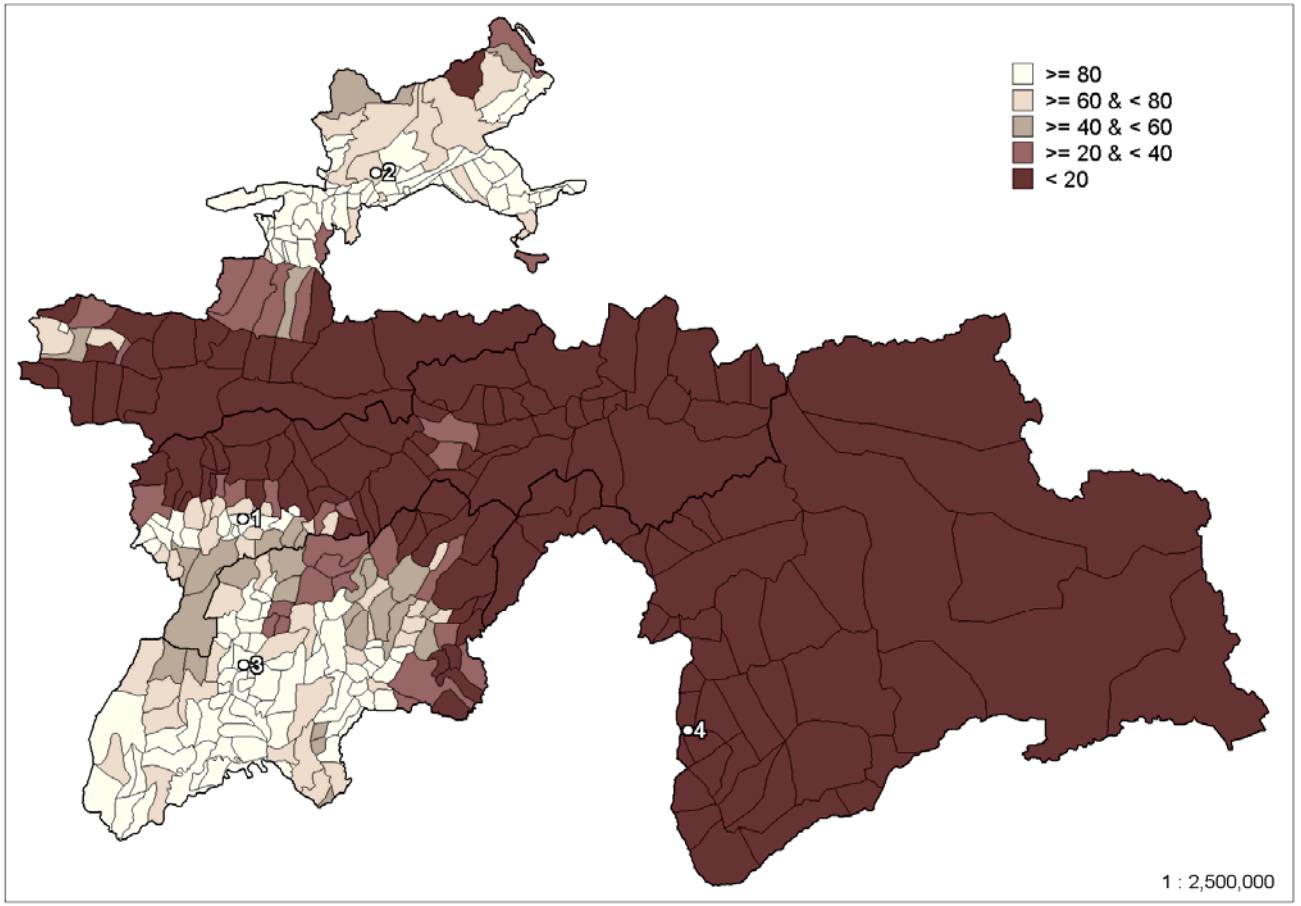
Per capita monthly food consumption expenditure

Average (mean) food consumption expenditure adjusted for regional prices (Somoni)



Source: 2000 Census of Tajikistan and 2003 TLSS.

Percentage cover of optimal agricultural land



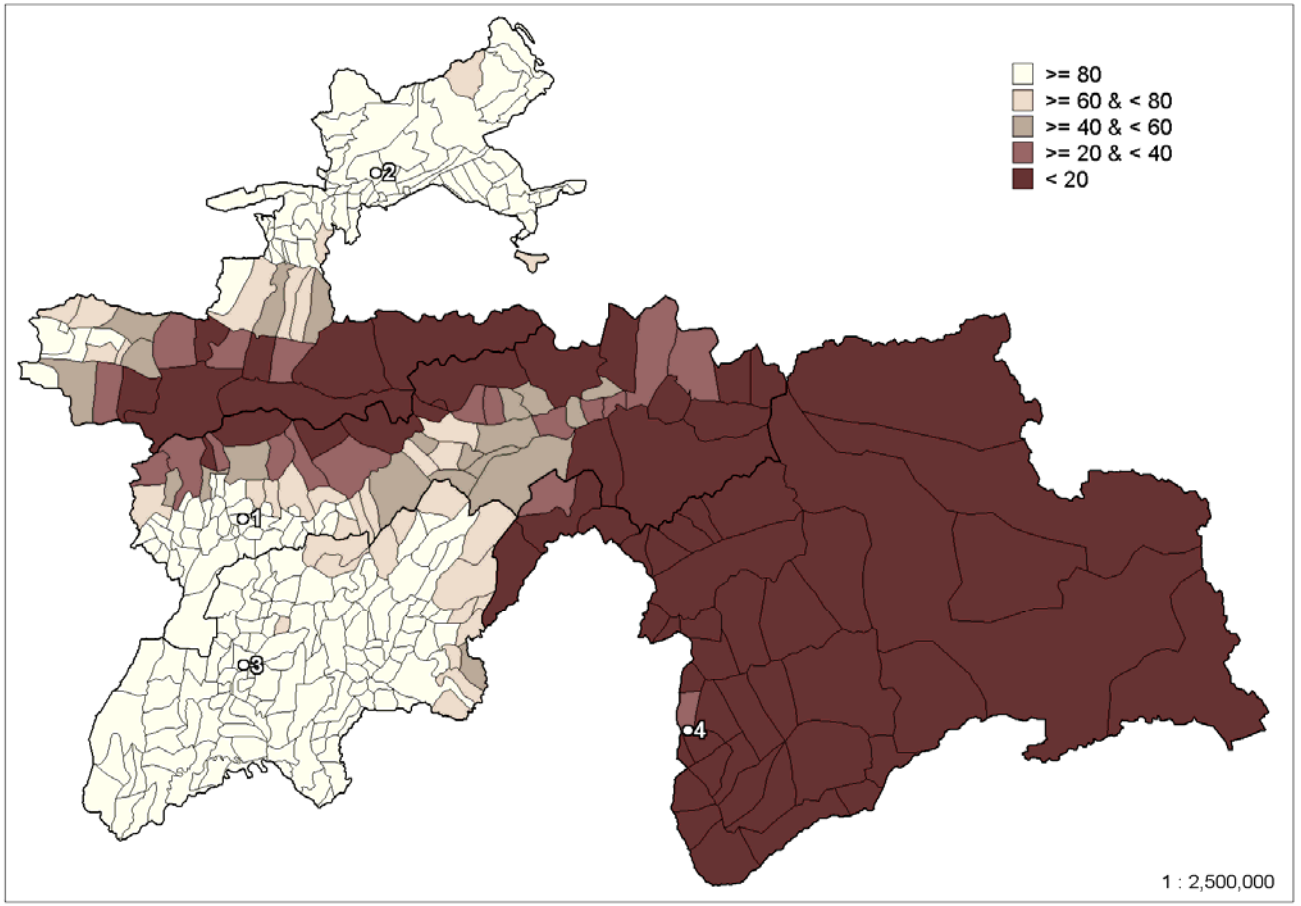
This is a measure of the percentage of the area classed as optimal agricultural land from topography. Optimal agricultural land is defined as land below 1800m and having a slope of less than 10°

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: Shuttle Radar Topography Mission, 2000. Slope intervals obtained from:
Zhu Yu , China's Dryland Farming and Practices. (http://www.lanl.gov/chinawater/documents/zhuyu.pdf) .
Height intervals obtained from: Sarah Robinson, AKDN

Percentage cover of cultivatable land



Source: Shuttle Radar Topography Mission, 2000. Slope intervals obtained from:
Zhu Yu , China's Dryland Farming and Practices. (http://www.lanl.gov/chinawater/documents/zhuyu.pdf) .
Height intervals obtained from: Sarah Robinson, AKDN

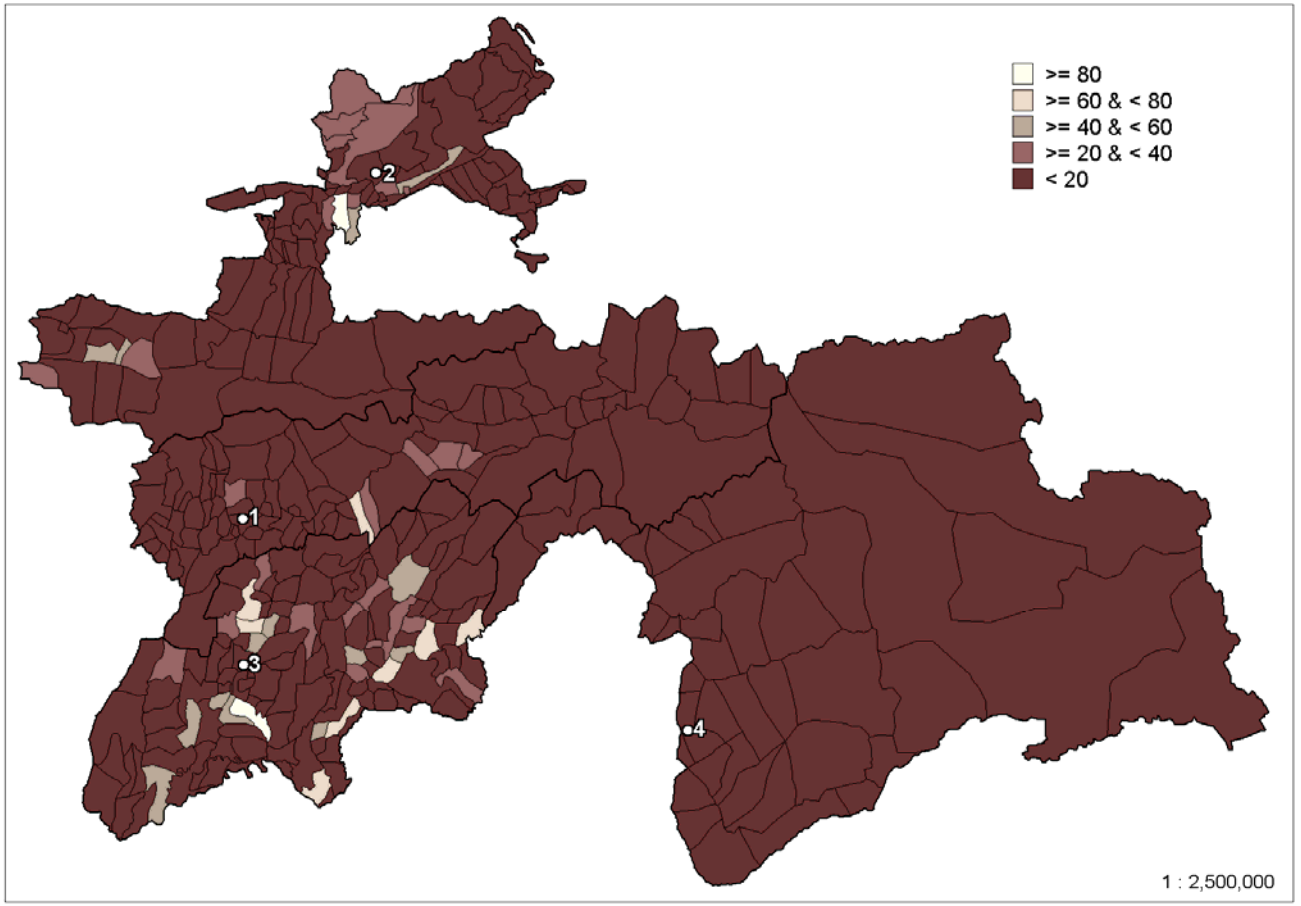
This is a measure of the percentage of the area classed as cultivatable from topography. Cultivatable land is defined as land below 3000m and having a slope of less than 25°

Optimal agricultural land is defined as land below 1800m and having a slope of less than 10°

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Percentage land classed as dry crops



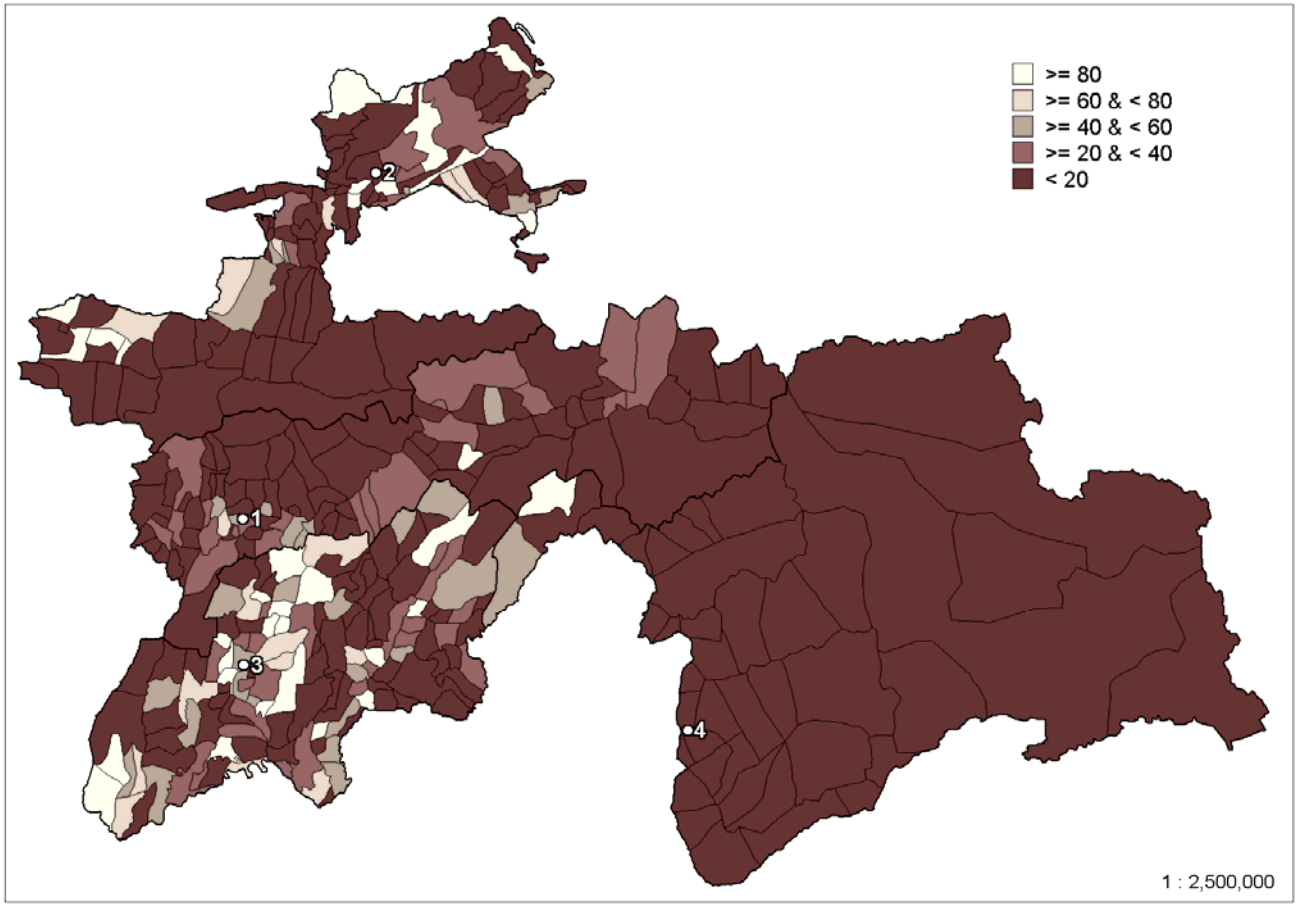
This is a measure of the percentage of the area classed as dry crops (Graminoid)

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: VMAP – Vegetation dataset

Percentage land classed as other crops



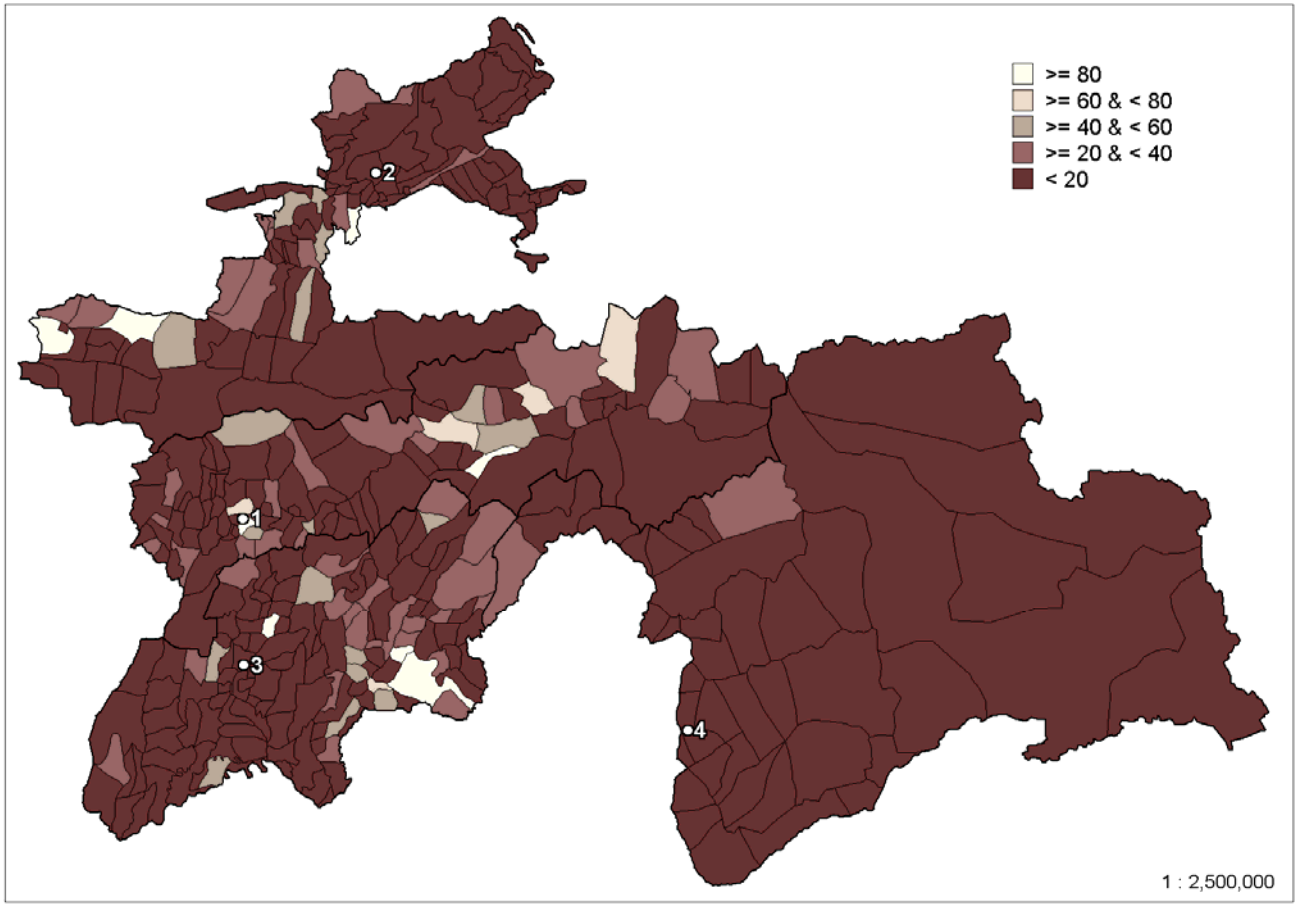
Source: VMAP – Level 0, Vegetation dataset

This is a measure of the percentage of the area classed as "other" crops. This land cover class approximately corresponds with the cotton growing regions of Tajikistan.

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Percentage land classed as unknown crops



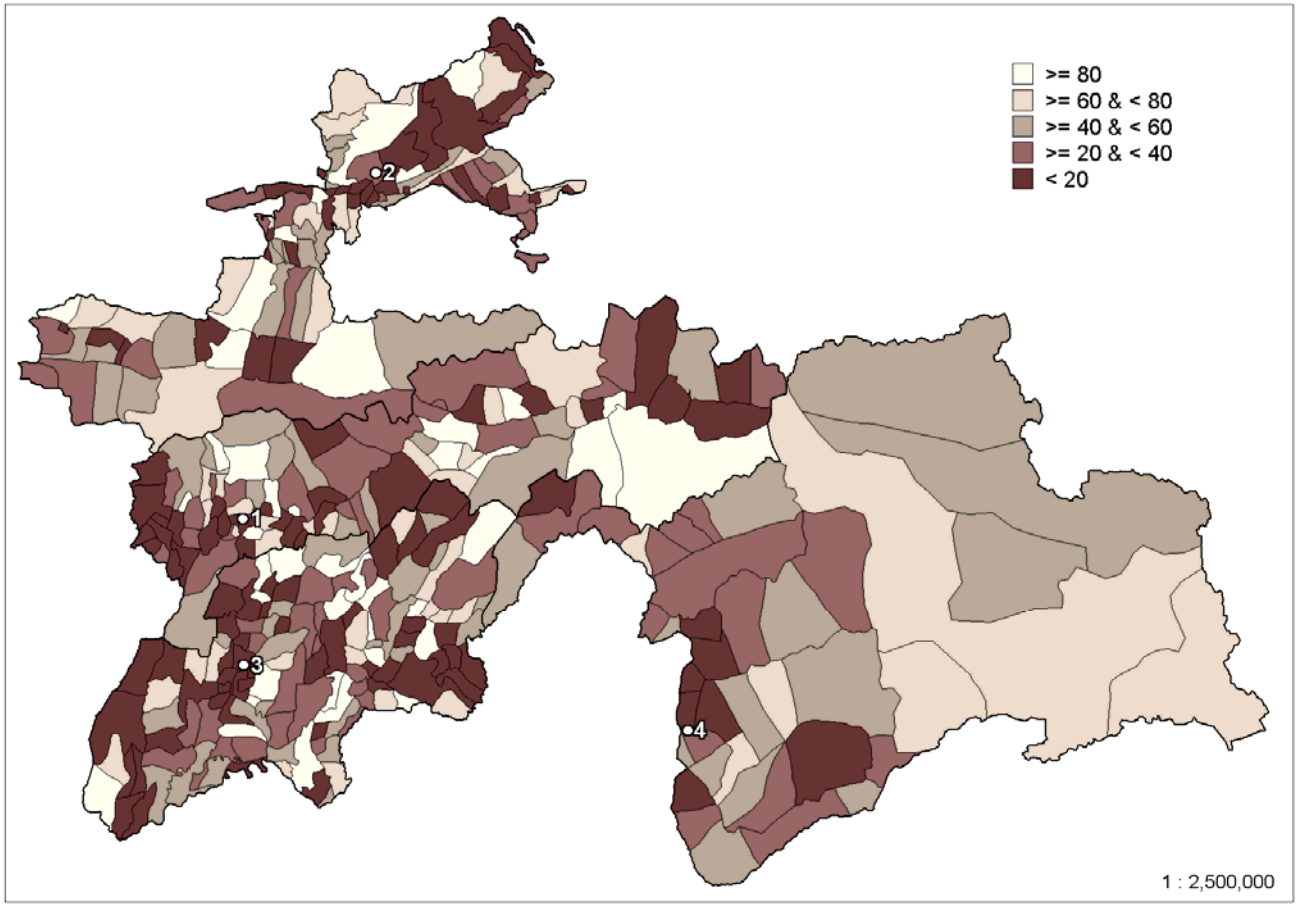
This is a measure of the percentage of the area classed as unknown crops

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: VMAP – Level 0, Vegetation dataset

Percentage land classed as grassland



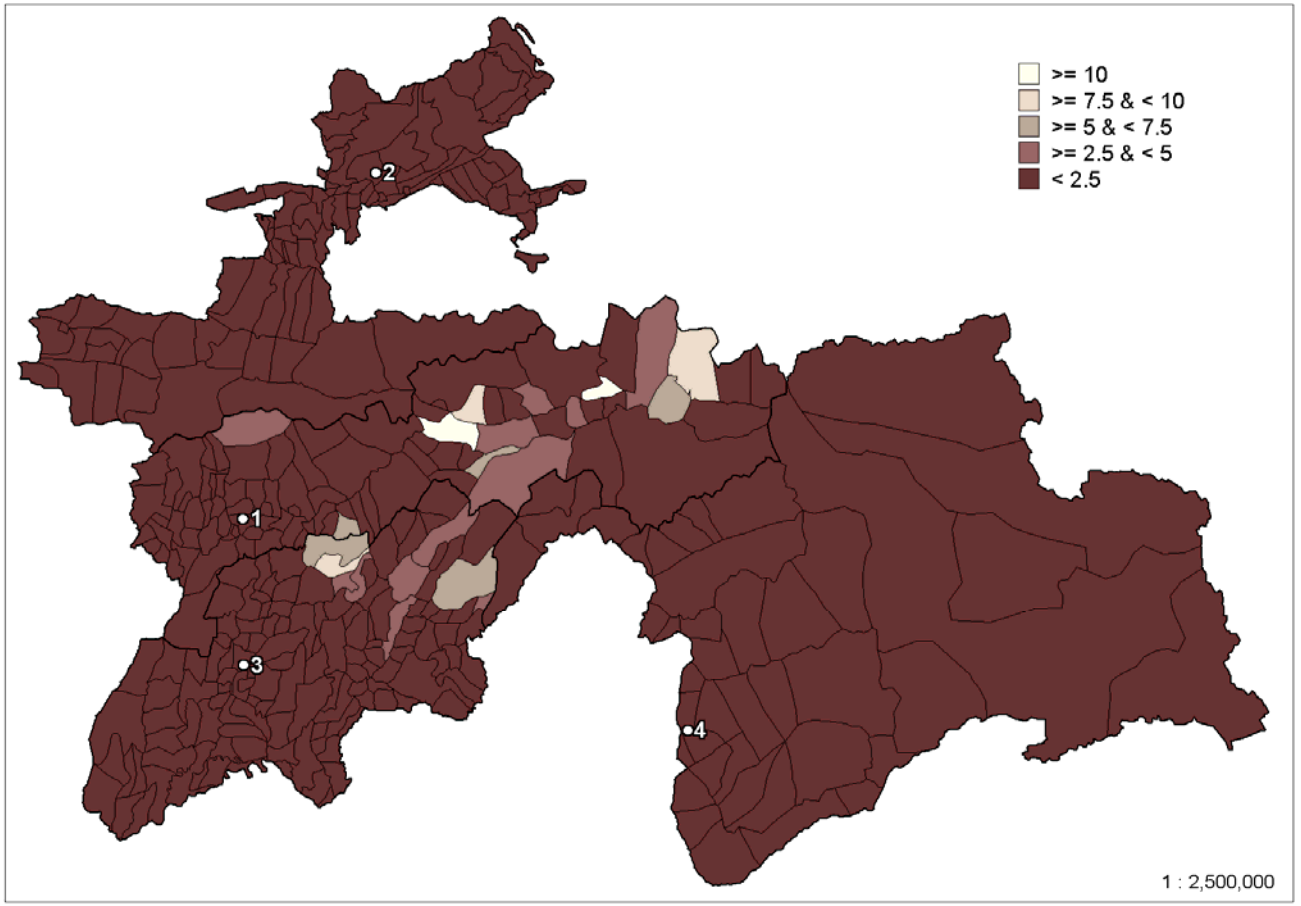
This is a measure of the percentage of the area classed as grassland

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: VMAP – Level 0, Vegetation dataset

Percentage land classed as forest



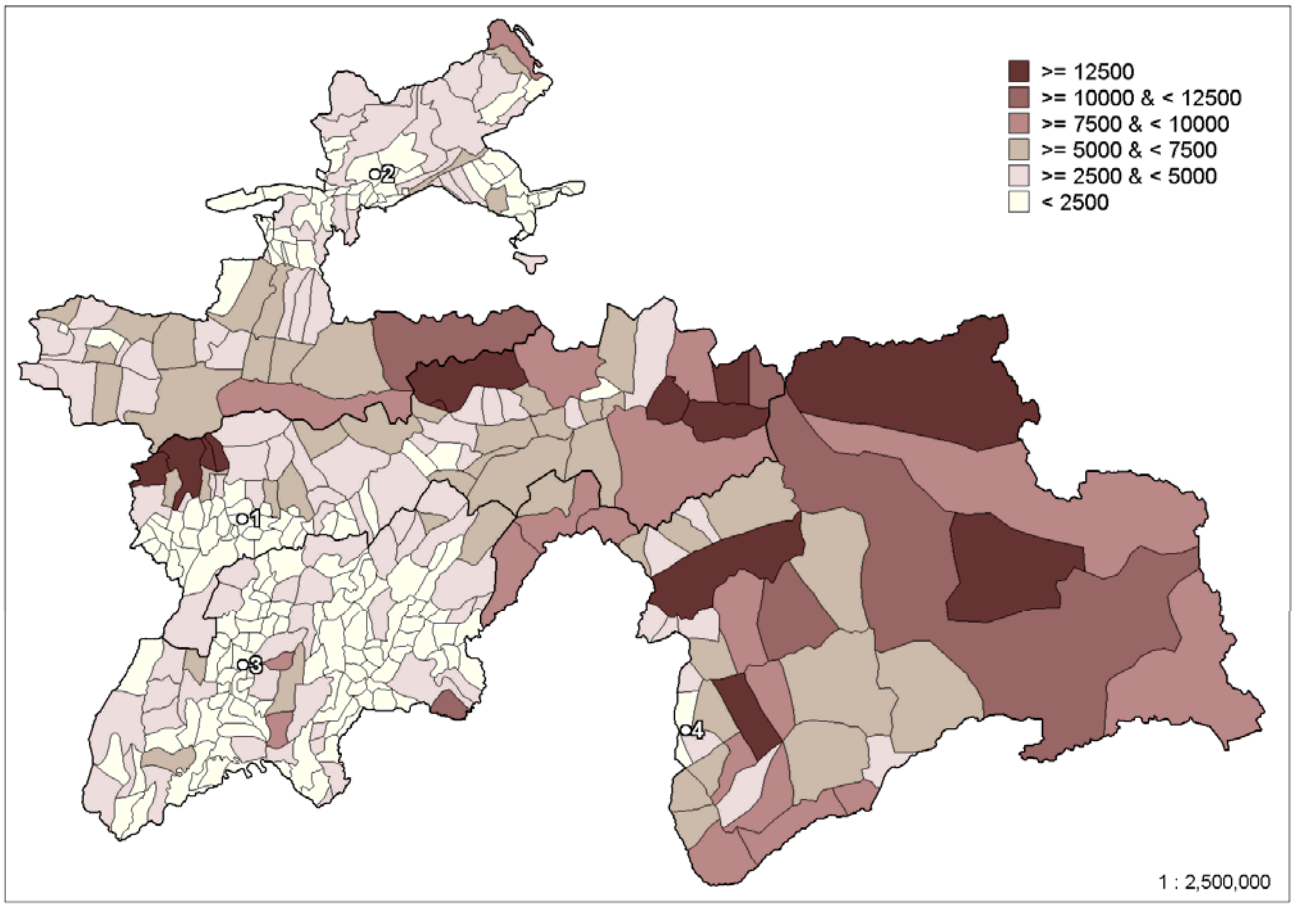
Source: VMAP – Level 0, Vegetation dataset

This is a measure of the percentage of the area classed as forest

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Mean distance to road (metres)



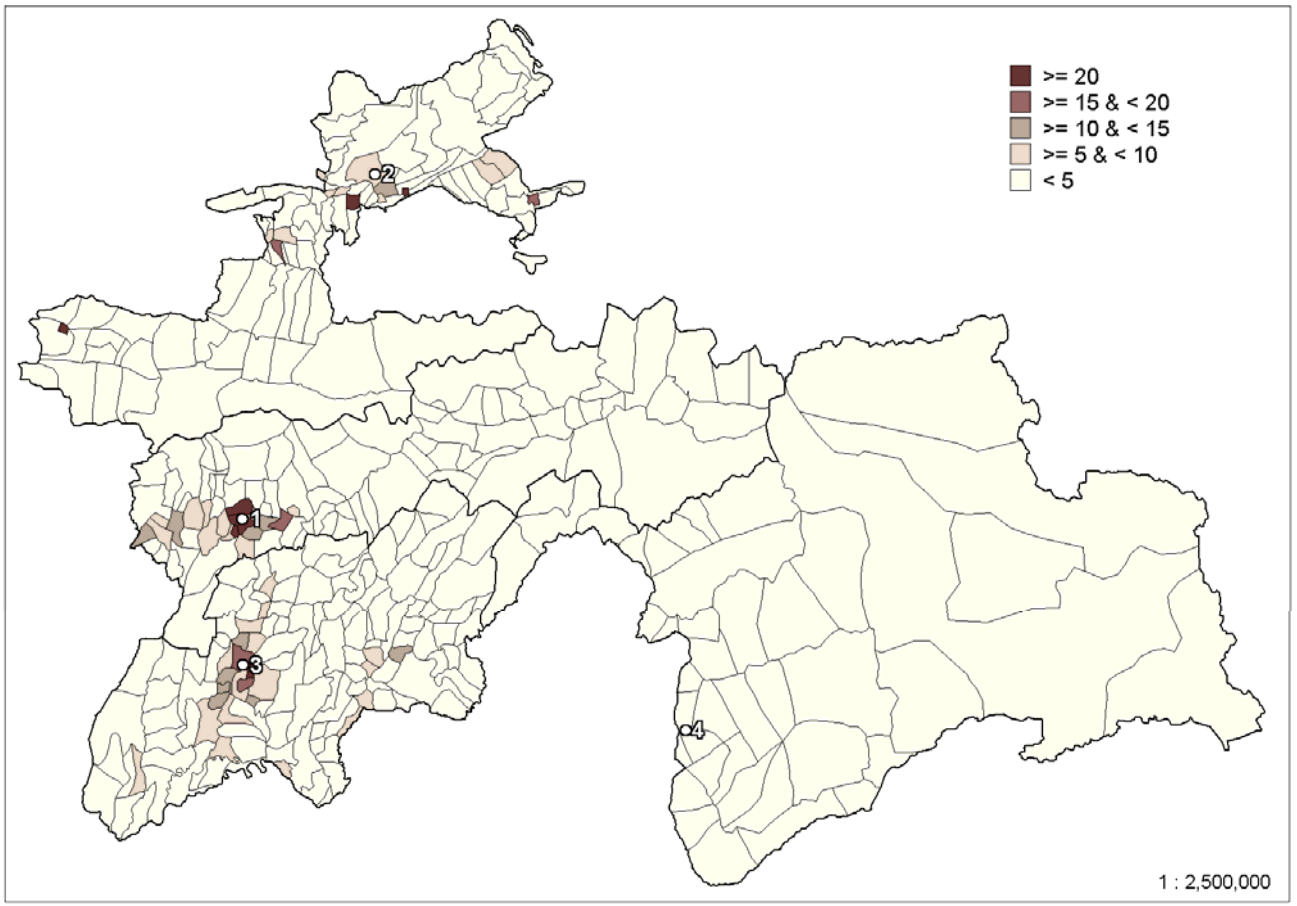
This is a measure of the average distance within each jamoat to the nearest major road. The road dataset used is derived from 1:100,000 scale Soviet Military mapping. Roads classed as metalled form the base of the dataset. Additional roads have been captured with the aid of VMap level 0 roads data (especially in GBAO), where roads shown as non-metal have been subsequently upgraded.

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: 1:100,000 Soviet Military mapping obtained from University of Berkeley, USA. http://www.lib.berkeley.edu/EART/tajikistan/100k.html
Additional roads based on VMAP – Level 0, Roads dataset

Percentage urbanised



Percentage of the jamoat that is urbanised

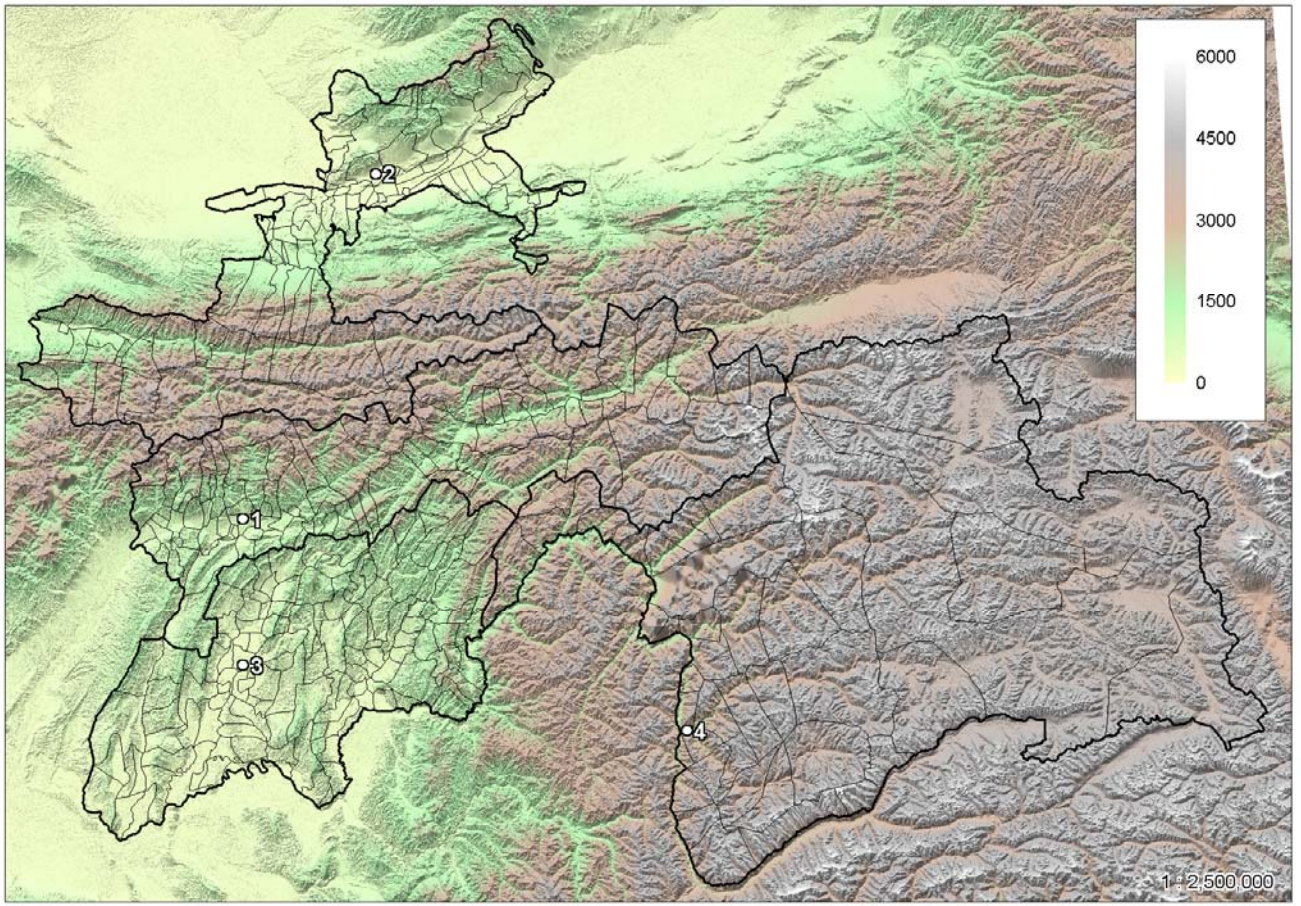
The urban areas have been derived from 1:100,000 scale Soviet Military mapping. Settlements with more than 100 households were included.

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: 1:100,000 Soviet Military mapping obtained from University of Berkeley, USA. http://www.lib.berkeley.edu/EART/tajikistan/100k.html

Shaded Relief / Elevation (metres)



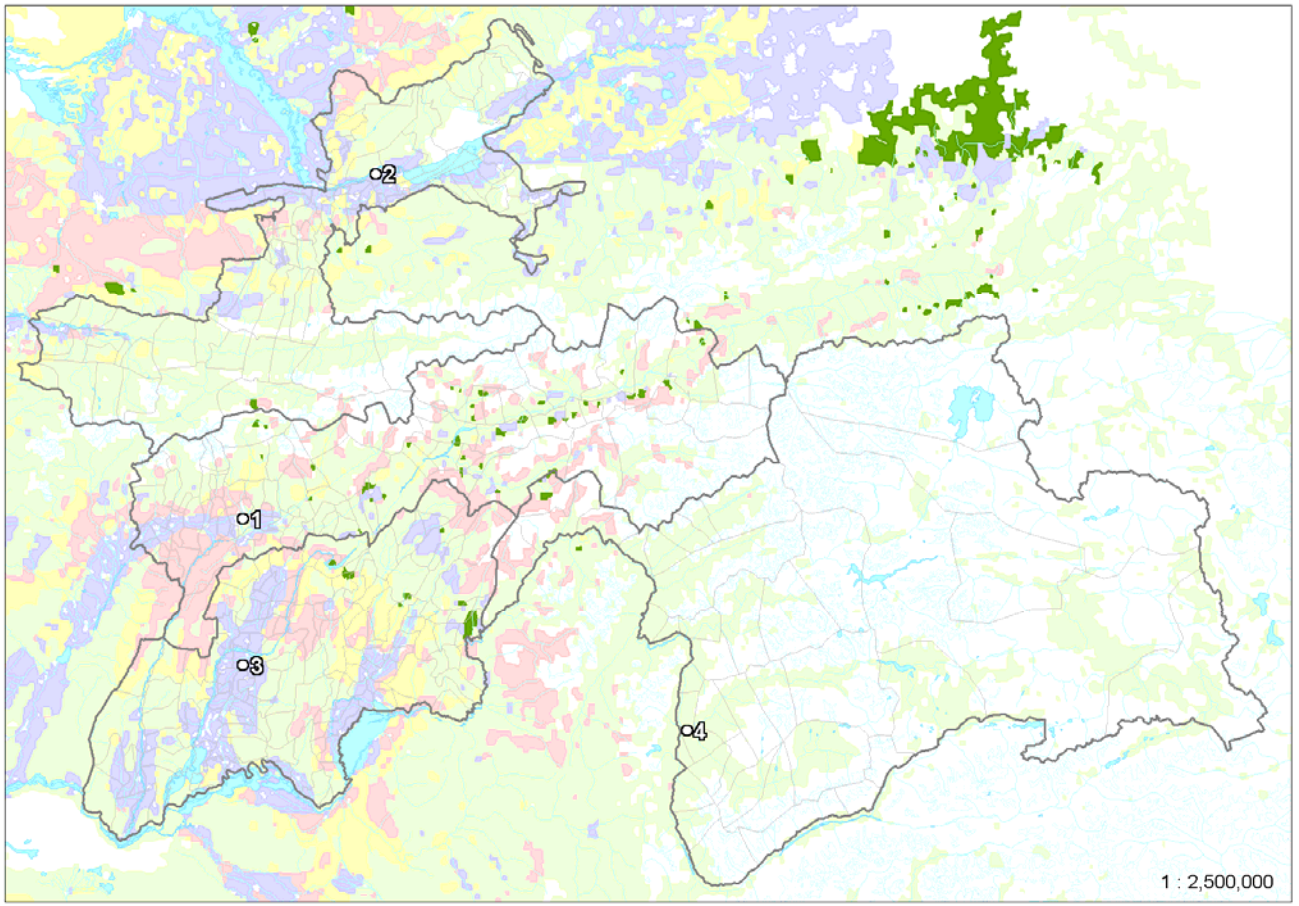
Shaded relief map showing elevation in metres

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: Shuttle Radar Topographic Mission (SRTM) dataset

Land Cover



Map Showing
Land Cover
Classes

Land Cover

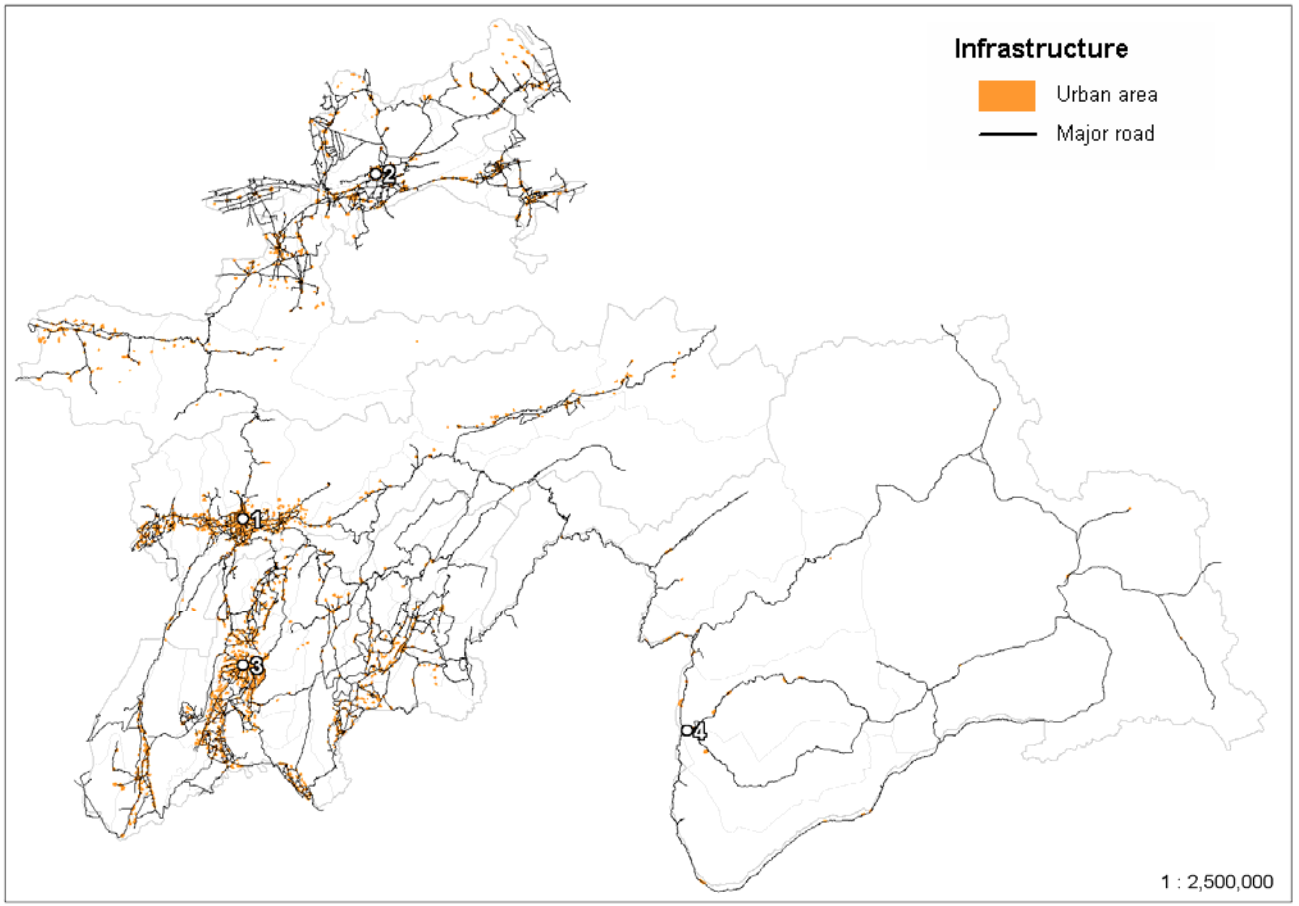
- Grass
- Trees
- Dry crops
- Other crops (possibly cotton)
- Unknown crops
- Permanent snow and ice
- Lake
- River

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

Source: VMAP level 0, dataset

Infrastructure



Source: 1:100,000 Soviet Military mapping obtained from University of Berkeley, USA.
http://www.lib.berkeley.edu/EART/tajikistan/100k.html

Additional roads based on VMAP – Level 0, Roads dataset

Major Cities

1.Dushanbe
2.Khujand
3.Kurgan-Tyube
4.Khorugh

The road dataset used is derived from 1:100,000 scale Soviet Military mapping. Roads classed as 'metal' form the base of the dataset. Additional roads have been captured with the aid of VMap level 0 roads data (especially in GBAO), where roads shown as non-metal have been subsequently upgraded. Railways and airport data has been derived from VMap. The urban areas have been derived from 1:100,000 scale Soviet Military mapping. Settlements with more than 50 households were included.